



The Magazine for Information Executives

THE
TENTH
ANNUAL

ENTERPRISE VALUE AWARDS

New Businesses ■ New Processes ■ New Relationships

Meet the Winners:
Leadership for
Challenging Times



David Kepler, CIO
Dow Chemical
Page 56



Karen Bassett, CIO
Pennsylvania DEP
Page 62



Bill Snyder, CIO
Enterprise Rent-A-Car
Page 72



C. Douglass Couto, CIO
Michigan DOT
Page 82



Edward Glotzbach, CIO
SBC Communications
Page 92

As a product developer at JVC,
I was asked to create a hybrid
VCR that would revolutionize the
way people watch TV programs.
The challenge was to make it
no bigger than a standard VHS
recorder and get it to market within
a year. Did I reach my goal? You bet.

**I CAN BEAT
I HAVE A FINGER ON THEM**

JVC
AND
FUJITSU
LSI TECHNOLOGY

JVC wanted to create a VCR like none other. One that combines the multifunctions of a hard disk drive with the familiarity of a VCR. So TV programs can be recorded and played back simultaneously. Size, of course, was a factor. So was time. That's why JVC chose Fujitsu's high-performance, highly integrated semiconductor solution, which provided all the necessary circuits on a single 28mm chip. With the technology and expertise provided by Fujitsu, JVC successfully developed a finished product within one year. Now even more people are tuning in to JVC. For more details, visit us.fujitsu.com/casestudy/. With a partner on the cutting edge of technology, you can accomplish anything.



TIME.
FAST FORWARD BUTTON.

FUJITSU

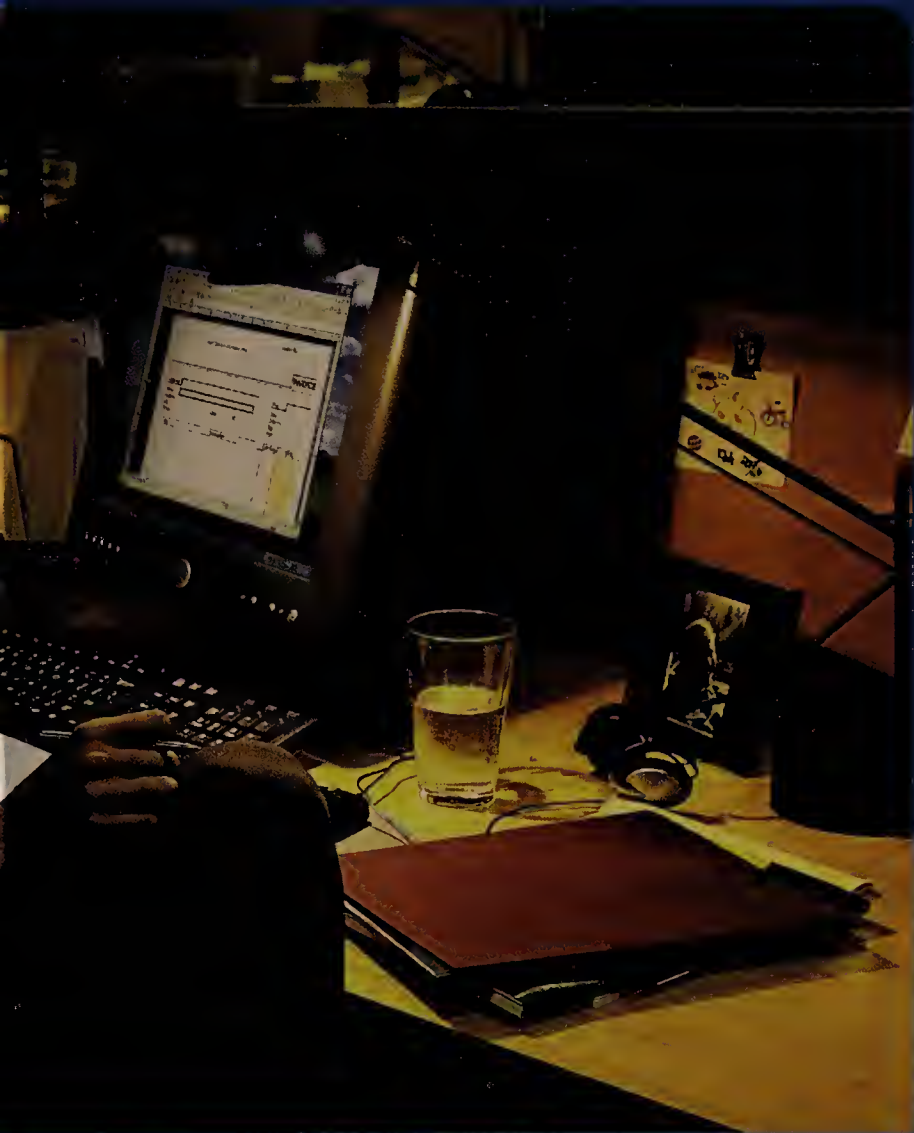
THE POSSIBILITIES ARE INFINITE

www.fujitsu.com



They work all hours. They
expect their computers
to do the same.
Keep them **running.**

Microsoft



Yes you can. Introducing Microsoft® Windows® XP Professional, the most reliable version of Windows ever. Features like System File Protection, System Restore, and Device Driver Rollback add to its dependability. Plus, the new Remote Assistance feature lets you take remote control of a user's PC and perform any diagnostic and repair operations as if you were sitting right there in the user's chair. All of which translates into fewer help-desk calls and fewer headaches. With Windows XP, you can.
www.microsoft.com/windowsxp/itpro

Microsoft®
Windows^{xp}
Professional



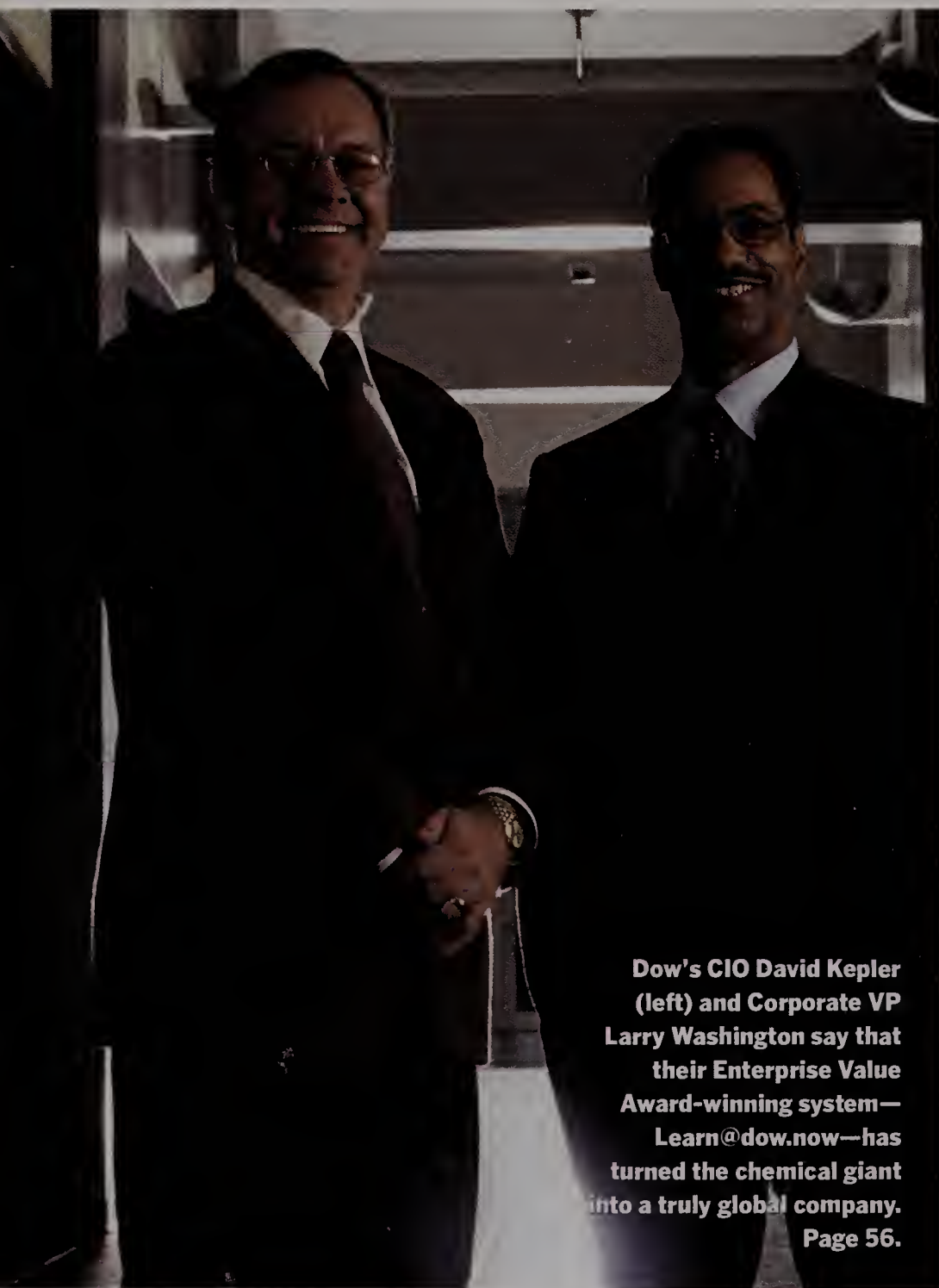
VOL. 15 • NO. 8 • FEBRUARY 1, 2002

THE TENTH ANNUAL

ENTERPRISE VALUE AWARDS



SPECIAL ISSUE



Dow's CIO David Kepler (left) and Corporate VP Larry Washington say that their Enterprise Value Award-winning system—Learn@dow.now—has turned the chemical giant into a truly global company. **Page 56.**

Features

OVERVIEW

New Orders of Magnitude | 48

A true assessment of IT value today must include its power to transform enterprises, industries and society as a whole.

By Katherine Noyes

DOW CHEMICAL

The World's Biggest Classroom | 56

Dow's Web-based training system serves a cast of thousands.

By Stephanie Overby

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Working in a Deeper Shade of Green | 62

This government agency used to spend its time conducting inspections and levying fines. Now an integrated system lets it pursue its real mission—protecting the environment. *By Sarah D. Scalet*

ENTERPRISE RENT-A-CAR

How to Stay Ahead of the Curve | 72

A rental car agency's automated system has streamlined the replacement rental process and cemented the company's standing in the industry. *By Eric Berkman*

MORE ►►►

COVER PHOTOS: (STAR PHOTO) PETE MCARTHUR; (FROM LEFT) DAVID BADITOI, JIM GRAHAM, SCOTT INDERMAUR, DAVID BADITOI, STEVE RAWLS

FOR TODAY

Delicious eBusiness Infrastructure Management Solutions



**NO MATTER WHAT
YOUR INFRASTRUCTURE
MANAGEMENT NEEDS ARE,
WE HAVE SOLUTIONS
THAT WILL SATISFY
YOUR APPETITE.**

**Open 24 hours.
Every day.
ENSURING OPTIMAL
DELIVERY OF SERVICE.**

**CALL YOUR CA
SALES REPRESENTATIVE
OR VISIT CA.COM
FOR OUR SPECIALS.**

Chef's Network & System Management Solutions

Network end Systems Management Market Price
Service Level Management Market Price
Performance Management Market Price
Advanced Network Operations Market Price

Automated Operations Management Entrees

AutoSys® Job Management Market Price
Output Management Market Price
Data Transport Market Price

Hot IT Resource Management Solutions

Asset Management Market Price
Software Delivery Market Price
Remote Control Market Price
Service Desk Market Price

Triple Decker Database Management Solutions

Database Performance Management Market Price
Database Administration Market Price
Database Backup and Recovery Market Price

Web Infrastructure Solutions from The Grill

Management for WebLogic Market Price
Management for WebSphere Market Price
Management for Web Server Market Price
Management for MQ Series Market Price

Tasty Application Management

Application Management for ERP Market Price
 ♦ Management for SAP ♦ Management for PeopleSoft
Application Management for GroupWise Market Price
 ♦ Management for Lotus Notes ♦ Management for Exchange

Unicenter®

THE BEST INFRASTRUCTURE MANAGEMENT SOFTWARE.
AVAILABLE À LA CARTE. BON APPÉTIT.

In infrastructure management, no two appetites are alike. That's why Unicenter lets you choose only the components you need, just when you need them. Of course, it's also still available prix fixe. Regardless, the individual elements will work together seamlessly. So you can build end-to-end infrastructure management solutions for your business without biting off more than you can chew.



Computer Associates™

HELLO TOMORROW | WE ARE COMPUTER ASSOCIATES | THE SOFTWARE THAT MANAGES eBUSINESS™

ca.com/unicenter

©2001 Computer Associates International, Inc. (CAI). All trademarks, trade names, service marks, and logos referenced herein belong to their respective companies.

Features *continued*

MICHIGAN DEPARTMENT OF TRANSPORTATION Paving Over Paperwork | 82

By automating its collection of inspection data, Michigan cuts the cost of building roads and bridges.

By Stephanie Overby

SBC COMMUNICATIONS More Lines, Less Waiting | 92

SBC's network management tools do more than help the telecommunications company gauge capacity; they improve customer service and reduce costs as well.

By Tom Field

THE PROCESS How We Picked the Winners | 98

Enterprise Value Awards judges and review board members overcame logistical challenges to rigorously measure the value of this year's winning systems.

By Katherine Noyes

Columns

TOTAL LEADERSHIP In Rough Waters | 40

When your company is in trouble, it takes a special touch to lead well.

By Patricia Wallington

NEW in CIO

CXO PERSPECTIVES | 44 Views from the Executive Suite

How to Partner With Your CEO

Business success depends on the relationship between the CEO and CIO. Here's what Vanguard Group's CEO expects from a CIO—and how he gets *business* technology right.

By Jack Brennan



Sections

TRENDLINES | 24

Good job hunting; Pneumatic tubes to the rescue; Nonprofits need metrics too; Beware of CRM backlash. *And more*

BY THE NUMBERS | 28

Invest in privacy policies and keep your customers.

ON THE MOVE | 36

CIOs on the go—see where your IT peers are working now.

EMERGING TECHNOLOGY Special Delivery | 107

As webpages get more complicated, content delivery networks aim to take a load off.

By Sarah D. Scalet

COMPANIES TO WATCH | 110

Cs3's singularly focused firewall product helps you and others on the Net.

UNDER DEVELOPMENT | 112

New encryption technology may offer unbreakable security.

REVISIT | 114

Massively parallel processing is still looking for the mainstream.

PREDICTIONS | 114

Mobile purchasing is set to take off.

In Every Issue

FROM THE EDITOR Down to the Core | 12

So much of this year's Enterprise Value Awards was different, and thanks to the work of many people, it set a new standard of excellence. *By Abbie Lundberg*

INBOX | 14

Reader feedback

INDEX | 120

EXECUTIVE SUMMARY | 122

Check out the bite-size summaries of all the feature stories found in this issue.

**Mainframe capability in a midframe.
Mainframe capability in a midframe.
Mainframe capability in a midframe.**

(Including full redundancy.)



MIDRANGE SERVER COMPARISON		
	Sun Fire™ 6800	IBM p690
Hardware fault-isolated partitioning	Yes	No
Hot-swappable CPU/memory	Yes	No
OS live upgrades	Yes	Yes
Full hardware redundancy	Yes	No

use the same tools, applications, administration and resources to deploy and manage each one—and that means unsurpassed investment protection for you. Reason enough why Sun now leads IBM, as well as HP, in both UNIX® midrange server revenue and shipments? And why Sun now leads IBM, as well as HP, in both UNIX midrange server revenue and shipments. Sorry, we couldn't resist repeating that.

We never tire of hearing it: Six months after its unprecedented introduction, the Sun Fire™ 6800 is still the only midrange server that delivers the mainframe-class features you need to consolidate mission-critical data center applications—at 31% better price performance than IBM's p690¹. And every Sun server runs on the Solaris™/SPARC™ architecture, making them compatible from the desktop to the data center. So you

take it to the nth



1. Based on the server list prices of the configurations used in the SPECjbb2000 benchmark. 2. Based on the IDC Q2CY01 Server Tracker Report, 9/7/01.
©2001 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, the Sun logo, Sun Fire and Solaris are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. in the United States and other countries. Products bearing SPARC trademarks are based on an architecture developed by Sun Microsystems, Inc. UNIX is a registered trademark in the United States and other countries, exclusively licensed through X/Open Company, Ltd.



Rebecca Rhoads, VP and CIO, Raytheon

GIVE US THIS DAY: OUR DAILY WEB

DAILY Web Editor Ryan Mulcahy analyzes and condenses need-to-know business **In the News**.

MONDAY Technology Editor Christopher Lindquist covers what's coming in **Tech Tact**.

TUESDAY Web Writer Danielle Dunne talks with the experts on **CIO Radio**.

WEDNESDAY Web Writer Jon Surmacz makes sense of the numbers in **Metrics**.

THURSDAY Opinions on managerial, political and ethical dilemmas appear in **Sound Off**.

FRIDAY Executive Editor Derek Slater gives advice worth the price in the **35 Cent Consultant**.

EXECUTIVE RESOURCES

IT Value Research Center

If reading about our Enterprise Value Award winners inspires you, check out our new **IT Value Research Center**. You'll find articles, reports, case studies and handy calculators to help you do everything from prioritizing IT projects to deciding which methodologies are right for your business. www.cio.com/itvalue

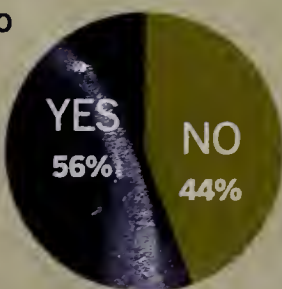
Analyst Corner

Read the latest reports from the top analysts on everything from "Building a Brand on the Web" (Giga) to "Answering Your Training Needs" (IDC). www.cio.com/analyst

CIO QUICK POLL REPORT

Does PowerPoint reduce conversation to simpleminded bullet points?

Go online to answer this week's Quick Poll. www.cio.com/poll



WEB CONNECTIONS

WEIGH IN How have the events of 9/11 affected IT value?

We asked this year's four Enterprise Value Award judges ("How We Picked the Winners," Page 98) to assess how the events of 9/11 affected their views.

Rebecca Rhoads: We are viewing value and defining value more holistically. I think that we are going to define value in terms of business continuity and

managing and protecting the risk of the company. It's almost a stewardship. The company's value in terms of the community is something that we are all reevaluating as well.

Go to CIO.com to read the other judges' answers and post your own reactions.

TALK BACK Should an IS department try to sell its own solution to other enterprises?

Both the Michigan Department of Transportation ("Paving Over Paperwork," Page 82) and the Pennsylvania Department of Environmental Protection ("Working in a Deeper Shade of Green," Page 62) implemented technical solutions to pressing problems. Then they turned around and, in essence, offered the fruits of their labor to other states. Is this a feasible future for IT? You tell us.

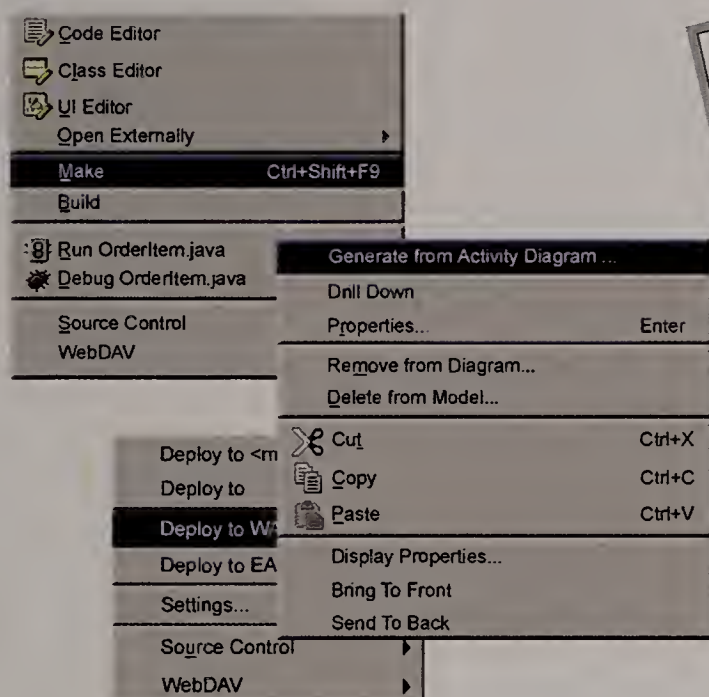
ASK THE SOURCE What are the secrets to rolling out a successful enterprisewide project?

SBC Communications CIO **Edward Glotzbach** ("More Lines, Less Waiting," Page 92) knows how to deploy the big projects. And he knows how to do it with buy-in from the business side. For the next two weeks, he'll be available online to answer your questions about how IT can improve employees' quality of life while it makes the IS department into heroes.

Find the links to these and other resources in the WEB CONNECTIONS box at www.cio.com.

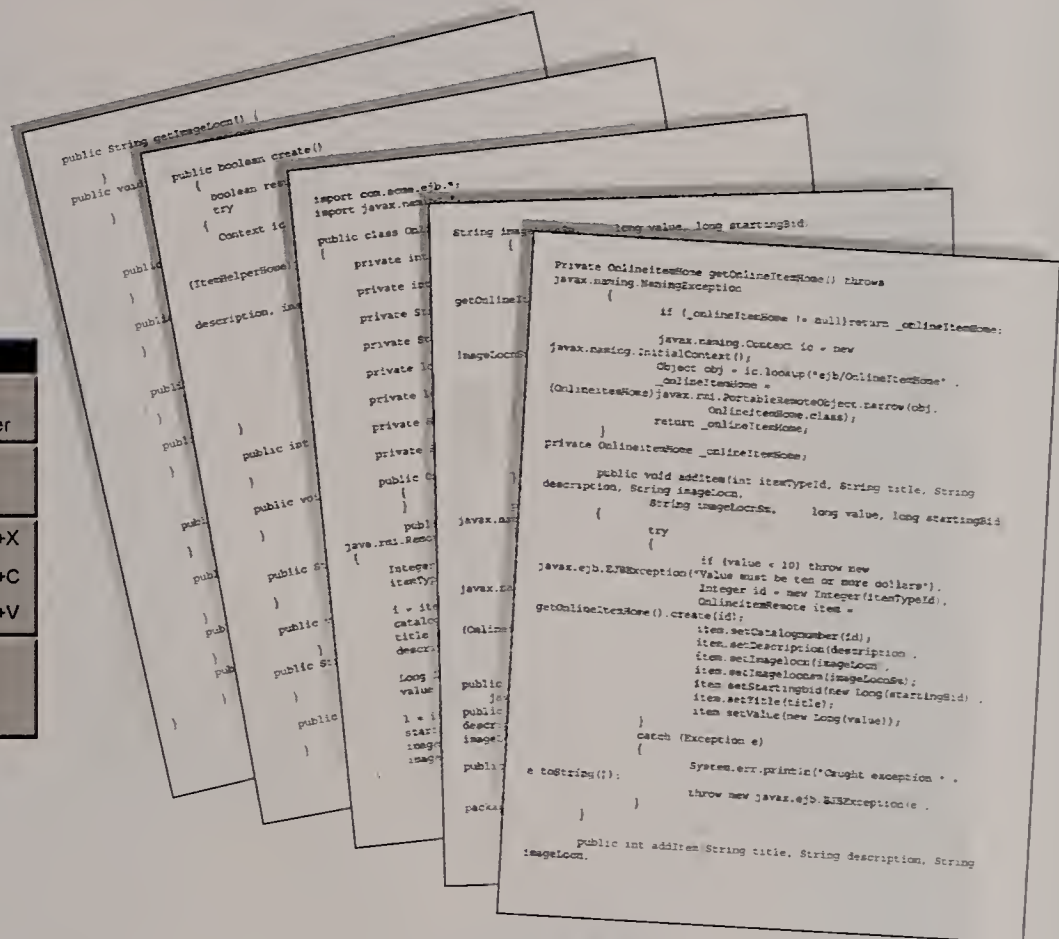
Oracle vs IBM

Java Development



Oracle

Online auction application
zero lines of handwritten code



IBM

Online auction application
166 lines of handwritten code
Source: IBM Web Site

ORACLE®

Source: <http://www-4.ibm.com/software/webservers/studio/preregister.html>
Products tested: Oracle9i JDeveloper Release Candidate, WebSphere Studio
Application Developer for Windows Preview.

oracle.com/javacode
800.633.1072

NEC

MultiSync LCD 1850X

XtraView+

EXIT

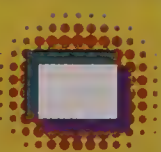
CONTROL

ADJUST

NEXT/INPUT

RESET/OSD

⏻



See more of your ideas. Less of your monitor.

Introducing the world's first, most complete line of thin-frame options from the best-selling brand of flat panel monitors. More picture. Less frame. Nothing to distract you from amazing color and clarity, or take away from edge-to-edge flicker-free viewing. At just 18.5 mm per side, it's the industry's thinnest frame. Plus, the MultiSync® LCD1850X, LCD1550X, LCD1550M and LCD1550V offer a choice of sizes and colors; touchscreen and protective glass technologies; height-adjustable stands; portrait and landscape viewing; and an endless array of multimedia options. And their sleek designs provide virtually seamless viewing in multi-monitor applications.

So broaden your horizons. Choose Ambix™ for digital/analog dual input technology that ensures long-term compatibility. XtraView+™ for wide angle viewing. OmniColor™ technology for precise color values. Or LiquidView™ for high-resolution readability. It's innovation that lets you see more of what you want. Less of what you don't.

Learn more at www.necthinframe.com or call 888-NEC-MITS.

SEE MORE.™

NEC is the #1 best-selling flat panel monitor brand according to data from the Stanford Resources, Inc. Flat Panel Monitraq Q1 '01. MultiSync is a registered trademark, and Ambix, XtraView+, OmniColor and LiquidView are trademarks of NEC-Mitsubishi Electronics Display of America, Inc.

©2001 NEC-Mitsubishi Electronics Display of America, Inc.
All rights reserved. Simulated images in monitors.



From the Editor

lundberg@cio.com



To find out how to apply for next year's awards, visit the Enterprise Value Awards website at www.cio.com/eva.

Down to the Core

THE JUDGING OF the Enterprise Value Awards was different this year. Our venue changed from the historic, lofty-ceilinged Faneuil Hall of last year to the Vault Boardroom at the Boston Stock Exchange. The Vault is an interesting and unique location, to be sure, but in the context of September (we held the judging two weeks after the terrorist attacks), the below-ground site, with its heavy security and massive iron doors, served as a striking if unintentional illustration of how much our world had changed.

I am extremely grateful to everyone involved for their commitment to the project. Two members of the review board were out on site visits on the 11th; Jim McGee went from interviewing executives at Dow Chemical to sitting with their staff in front of the conference room television set, watching events unfold. Both Jim and Sheila Smith had to rent cars and drive long distances to get home to their families.

I'm indebted to our CIO judges for traveling to Boston and devoting an entire day to the deliberations, despite having their own new priorities to wrestle with: Rebecca Rhoads from defense contractor Raytheon, as our country was heading into war; John Glaser of Partners HealthCare System, thinking about how hospitals should respond to biological terrorism; Doug Barker of The Nature Conservancy, seeing charitable giving shifting away from anything unrelated to the victims—even

Gregor Bailar made it, although Nasdaq's headquarters at One Liberty Plaza, next to the World Trade Center, was devastated by the attacks. (To read the account of the story Gregor told us at dinner that night—an incredible tale of successful business continuity planning—go to www.cio.com/printlinks.)

Thanks too to Rick Swanborg, my cochair for the awards. Rick's enthusiasm, attention to detail and sense of humor helped make this year's judging as positive and successful an experience as any.

Of course, the judging is only the start of creating an awards issue. Katherine Noyes, CIO's IT value editor, was responsible not only for putting the issue together but also for taking a step back and explaining what the collective accomplishments of this year's winners represents in the context of our 10-year history of celebrating enterprise value. Owen Edwards created a new and powerful design that conveys both real value and a return to basics. Together, with the help of a great editorial and design team, they turned this year's Enterprise Value Awards issue into a new standard.

Finally, thanks to this year's winners and all of the applicants. We couldn't do any of this without all the smart, dedicated, inventive people who created these systems in the first place. Those of us involved in the judging process this year agree that we're seeing more examples of increasingly sophisticated business value than ever before.

Allie Lundberg

PHOTO BY JASON GROW/SABA

The Internet is a volatile place. For peace-of-mind, you need a provider that can deliver solutions now and in the future.

NTT Communications has been supplying global managed data network services, through technologies that include Frame Relay and ATM, under the name of Arcstar.

In 2000, we acquired Verio, a leading Internet solutions provider. Now our combined forces offer worldwide IP services via a global Tier 1 network and state-of-the-art managed Data Centers. As NTT/VERIO, we promise stability and reliability backed by strong financial and knowledge resources.

If the Internet is vital to your business, it's time you contemplated the wonders of secure and seamless connections at www.ntt.com/verio.

www.ntt.com/verio

For further information, contact :
NTT Communications Corporation,
nttverio@ntt.com

Can IP ever stand for Inner Peace?



NTT/VERIO

NTT Communications Group Offices Japan • USA • Brazil • UK • France • Germany • Netherlands • Belgium • Switzerland
• Italy • Spain • Korea • China • Hong Kong • Taiwan • Vietnam • Thailand • Indonesia • Singapore • Malaysia • Philippines • Sri Lanka • Australia

* A full service offering may not be available in some areas.

InBox

Reader Feedback

THE OPEN-SOURCE WASTELAND

I enjoyed your article about faulty software ["Let's Stop Wasting \$78 Billion a Year," Oct. 15, 2001], and I would like to share my ideas on how to improve the quality of packaged software.

First, large companies should realize that there is currently an imbalance of information between them and their software vendors. By correcting the imbalance, the customer will have better ability to decide which software to use and to make sure it works for his customers' needs. As it currently stands, the customer has to depend on the vendors' promises to see if the product will meet the customers' needs and whether it works well. Often the vendors will lie or cut corners.

The customer should insist that the vendor use a structured development method to develop its products. The quality of the methodology, the vendors' adherence to the

methodology and the state of readiness of the software—according to the quality metrics of the methodology—should be audited by an independent company, such as a CPA or management consultancy. The release criteria should specify an acceptable defect level that the software should reach before it is released. If you insist on those practices from your vendor, you will have assurance that you are dealing with a reputable vendor whom you can trust.

But can you get a vendor to follow these practices? Perhaps this was an impossible dream in the past, but I believe it is achievable now, especially using the software development methodologies available from the Software Engineering Institute at Carnegie Mellon University.

Second, I would like to correct what I believe is a misconception in your article about open-source software. You state, "When you buy software from a vendor, you can always turn to its help desk, however incompetent. With open source, you're on your own." While I agree with your concern over the quality of the vendors'



help desks, I believe you should investigate the resources available to users of open-source software. You will probably be surprised at how easy it is to get excellent support, not only from paid sources but also from volunteers who will answer questions posed on the Internet.

Howard B. Golden
Software Developer
Northridge, Calif.

howard_b_golden@yahoo.com

My compliments on the article, which was very timely and fairly well-reasoned. I have a couple of comments, though. First, I think this idea of paying only 10 percent up front then 10 percent a month has merit, but it's certainly not some magical fix. At least

if you buy the software up front then you have some rights in perpetuity.

Renting software leaves you with no recourse. Oh, you'll stop paying? Great, but you're left with nothing for your money and no way to access your files. So while it sounds good at first, I think that idea needs more work.

Second, thanks for pointing out UCITA. It's almost criminal that software companies want no responsibility for the quality of their product. They

already disclaim any warranty of merchantability or serviceability in most cases. I understand that making bug-free software is pretty much impossible, but this is outrageous.

I work in higher education, and I'm always wondering why more colleges and universities don't

form consortiums to produce software for a common cause. With all the money that goes to volume licensing for office apps and general use software, we could easily hire programmers to spit out open-source code for all. Yes it's a little idealistic, but I think it could work.

Jake Ruttle
General Resources Assistant
Bethlehem, Pa.

One of the main complaints about open source is that there is no central company to call, no central company to blame. Organizations also don't want to hire the kind of talent necessary to deploy this stuff. The solution is quite simple. Take the money that would normally be used to support and



The CRM Leader Extends Its Global Lead.

"Siebel 7 breaks new ground by taking a very functionally rich application and wrapping it in a Smart Web Architecture. It's designed to provide *fast implementation, smooth upgradability*, and to help customers achieve *long-term reductions in overall costs.*"

Mike Lawrie, Senior VP and Group Executive, Sales and Distribution, IBM Corporation,
November 2001

"Siebel 7 delivers the most comprehensive suite of industry specific CRM applications offering enhanced functionality and accelerating return on investment."

Jim Flinton, VP of eBusiness, Avaya,
November 2001

"We still have various legacy applications, so application integration is critical. Siebel 7, with its advanced Smart Web Architecture, enables application integration into complex environments such as ours."

Clemens Kaiser, Head of eCommerce, Bayer,
October 2001

"Competitors have reason to be fearful."

All of the applications are part of a new Smart Web Architecture consisting of a *zero-footprint client*, built-in portal framework, a new and detail-free *application network* for third-party integration, integrated analytics across the suite..."

Bruce Richardson, AMR Research,
October 5, 2001

"The dominant force in the industry is Siebel Systems, Inc."

New York Times,
October 1, 2001

To find out more about Siebel 7, view a demo at www.siebel.com/demo or contact us at 1-800-307-2181.

SIEBEL

Good service is good business.

purchase the proprietary product and figure out how much it is. This, I guess, would probably be difficult, but it would still be the best way. It is always easier to see how much one spends rather than how much one saves. From what I read in your article, the amount some of these companies are spending on making and deploying these products easily adds up to at least one or two decent yearly salaries for a software developer, especially in the current economy. What you do is take that money and hire a couple of people to develop the open source. Preferably it would be people already working on the project involved. Now you have somebody in your company to lean on. You can pressure him for whatever features you want and blame him when something breaks. When it comes time

in the first place. By buying buggy, incomplete junk and by heeding FUD, CIOs everywhere have forced software companies to behave the way they do.

From a software company's point of view, spewing FUD until a release is "finished enough" to ship to keep competitors at bay is the only path to success—ask any business type who knows the software business, and they'll tell you that engineers would prefer to ship perfect code. But upon release they would inevitably find out that the customers already bought the competition's half-finished product years earlier. So instead, engineers are forced to throw something together and ship it ASAP—quality be damned. All the software engineering methodologies in the world won't help scope and quality live up to what

After more than 20 years of observing senior IT executive behavior, my guess is that the same CIOs who are crying that their package software misfortunes are a function of how the industry works also pay—without question—the equivalent of \$300,000 per person per year for recently minted Big Five MBAs' advice on how to make it better.

If more CIOs took Meredith CIO Bill Crowell's immanently reasonable position—and used proper business judgment negotiating deals up front, including walking away from the table—we wouldn't be hearing about these horror shows. Caveat emptor applies to a technology purchase as much as it applies to buying a used car. Attempting to place the blame on the seller is like blaming trees for forest fires. In my opinion, this behavior is one of the key reasons technology people rarely advance to CEO or COO positions.

The bottom line is that harsh as it may sound, any CIO (or any other business manager for that matter) who abandons common sense when dealing with suppliers deserves what he gets.

Christopher Casey

PMP

Casey Advisory Services and Technologies

Concord, Mass.

casey@world.std.com

Open-source software is not always as tested and bug-free as open-source advocates would claim, nor is it prone to have acceptable documentation.

to deploy the product you have somebody who has a very intimate working knowledge of the software and can easily tweak it as necessary.

Samuel Johnson

pmoteus@kda.attmil.ne.jp

Glad to see an article that speaks the truth. Open-source advocates have been shouting for years that the commercial software vendors' claims of higher quality and support inherent in proprietary software are seldom actually true. Of course, open-source software is not always as tested and bug-free as open-source advocates would claim—nor is it prone to have acceptable documentation.

Still, what was missing from the article was the fact that CIOs are the ones who made the commercial software market work the way it does

was promised if cost and time are always higher priorities.

CIOs are right to demand quality software, and to be honest, software developers would prefer to live in a world where product quality drives competitive success more than marketing and sales. CIOs simply need to exercise enough discipline to define requirements and test products thoroughly (refusing to buy anything or deciding to go with a custom solution if nothing is satisfactory) before spending six or seven figures on a license.

Finally, contracts that are currently written by and for software vendors' interests should include penalties and termination clauses based on specific features and release dates.

Jamie Flournoy

San Francisco

jamie@white-mountain.org

CORRECTION

In our Trendline section "State CIOs Refocus," Dec. 1, 2001, we incorrectly cited the Partnership for Critical Infrastructure Security's URL. The correct Web address is www.pcis-forum.org. We regret the error.

WHAT DO YOU THINK?

Send your thoughts and feedback to letters@cio.com. Letters may be edited for length or clarity.

MicroStrategy

Selected as Editors' Choice

Comparison of Business Intelligence Software

MicroStrategy		✓
Brio		X
Cognos		X
Crystal Decisions		X

"MicroStrategy 7 is our Editors' Choice. Out-of-the-box, it is the easiest to deploy, and it offers a wider range of built-in analytical reporting functions than the other packages in this story. MicroStrategy can pull data together from multiple tables with remarkable flexibility."

PC Magazine, August 2001

Easiest to Deploy for Reporting, Analysis and Information Delivery

See for yourself.



Order a **FREE** Eval CD today.
www.microstrategy.com/cio
Call 1-866-866-MSTR (6787)

MicroStrategy
Best In Business Intelligence™

A photograph of a server room. On the left, a grey wall features a yellow warning sign with a black border. The sign has a black header with the word "WARNING" in yellow, and a yellow body with black text. Below the sign is a three-switch light plate. To the right, a server rack is visible, containing a computer monitor, a desk lamp, and other equipment. The room is dimly lit, with light coming from the server rack area.

WARNING

THIS FACILITY IS
SUBJECT TO
SUDDEN SHIFTS
IN SCALE.

When you think scalability, it's time to think software.

Today's Web-driven world demands a faster way to scale up and out. But instead of thinking hardware, it's time to think smarter software, as in the modular and scalable Microsoft® server platform.

THINK UPTIME "Microsoft provides scalable and reliable products at an unbeatable price with the ability to scale out, not just up. As a result we are able to add new servers without costly downtime." — Don Heckman, VP, Engineering Program Management, Qwest

The Microsoft server platform gives you the choice of thinking bigger, smaller, up, or out. That way you can deploy Microsoft SQL Server™ 2000 on Windows® 2000 Datacenter Server for heavy-duty ERP and transaction processing, and scale up to support terabytes of data and millions of transactions. Or scale out with Microsoft Application Center 2000 by adding clusters of Windows 2000-based



servers running distributed applications. Which means that it also has the lowest price-to-performance ratio of any competitive platform.*

So no matter how quickly things change, your business is always perfectly scaled to handle it. For more ways to scale with software, visit us at **microsoft.com/servers/scalability** **Software for the Agile Business.**

Microsoft®



The Magazine for Information Executives

President & CEO Joseph L. Levy

Publisher Gary J. Beach

Editorial Director Lew McCreary

EDITORIAL

Editor in Chief Abbie Lundberg

Deputy Editor Richard Pastore

Managing Editor David Rosenbaum

Managing Editor, Production Cheryl R. Asselin

Executive Editors Tom Field (Editorial and Community Development), Michael Goldberg, Christopher Koch (Investigations), Derek Slater

Columns Editor Katherine Noyes, **Departments Editor** Sandy Kendall, **Leadership and Management Editor** Edward Prewitt, **Opinion and Knowledge Management Editor** Megan Santosus, **Research Editor** Lorraine Cosgrove Ware, **Special Projects Editor** Mindy Blodgett, **Technology Editor** Christopher Lindquist

Senior Editors Alison Bass, Elana Varon (B2B E-Commerce)

Features Editors Lafe Low, Sara Shay

Senior Writers Scott Berinato, Eric Berkman, Meridith Levinson (B2C E-Commerce), Stephanie Overby, Susannah Patton (B2C E-Commerce), Sarah D. Scalet (Security and Privacy)

Staff Writers Simone Kaplan, Ben Worthen

Copy Chief Tom Wailgum

Asst. Managing Editor, Production Kathleen S. Carr

Copy Editors Kelli A. Gauthier (Assoc.), Emily S. Henderson, Sarah Johnson (Assoc.), Penny Sloane (Sr.)

Research Manager Lynne Z. Rigolini

Editorial Resource Manager Carol Zarrow

Editorial Assistants Amanda Fox, Joe Sullivan, Stephanie Viscasillas

Special Projects Assistant Cristina Sousa

Contributing Editor Janice Brand

Contributors Jack Brennan, Stewart Deck, John Edwards, Fred Hapgood, Jeffrey Seglin, Patricia Wallington

Editorial Operations Coordinator Karen J. Zirpola

Editorial Administrative Assistant Joyce Paquette

Editorial Intern Daniel J. Horgan

DESIGN

Executive Director, Art and Design Mary Lester

Art Directors Hana Barker, Lisa Munroe

Associate Art Directors Owen Edwards, Andrea Healy

Senior Designers Susan W. Gilday, George Lee, Terri Mitchell, Chandra Tallman

Associate Designers Alberto Capolino, Jennifer Landry

Design Group Assistant Rachel Barnett

WEBSITE

Senior VP/General Manager, Online Tim Horgan

Web Editorial Director Art Jahnke

Executive Web Editor Martha Heller

Web Editor Ryan Mulcahy

Web Writers Danielle Dunne, Jon Surmacz

Online Technology Director Dagmar Eiben

Senior Web Developer Ellen Morey

Online Research Manager Kathleen Kotwica

Audience Development Manager Andy Burrell

Web Developers Diane Chen, Shannon Macdonald

Web Engineer Kelly Kimball

Online Content Researchers Tara Gillet-Liloia, Lisa Sydney

Web Intern Graham White

CIRCULATION

Senior VP/Circulation Carol A. Spach

Subscription Svcs. Manager Denise Perreault

Subscription Svcs. Supervisor Tina Pescaro

Circulation Assistant Lisa Byron

Circulation Assistant/Researcher Matthew Millette

PRODUCTION

VP/Manufacturing Chris Cuoco

Production Manager Lee Tuttle

Ad Production Coordinator Lisa Stevenson

EXECUTIVE PROGRAMS

Executive VP Lynda Rosenthal

Executive Assistant Susan Weidman

VP, Event Marketing Cynthia Mollus

Director, Marketing Services Shellie Rapson James

Manager, Program Operations Brian Fuce

Manager, Procurement/Tech. Planning Cynthia Laird

Managers, Program Development Sherry Keyles, Maria Power

Manager, Client Services Jeremy E. Draper

Event Development Specialist Sandra J. Hughey

Program Applications Specialists Heather Beaton (Senior), Leah Graves (Assoc.)

Senior Program Marketing Specialist Karen Peabody

Operations Coordinator Michael Barbato

Fulfillment Services Coordinators Andrea Harney, Kristine Vibert

Manager, Event Planning Amy Sanderson

MARKETING

Executive VP/Marketing Cathy O'Leary Hayes

VP/News and Information Susan Watson

Media Relations Manager Karen Fogerty

News and Information Specialist Julie Hanson

News and Information Assistant Lori Piscatelli

Marketing Research Director Bridget Cammarata

Marketing Research Manager Carolyn Johnson

Sr. Marketing Research Analyst Dylan DiGregorio

Marketing Comm. Director Sue Yanovitch

Marketing Comm. Manager Nicole Glinski Curtin

Sr. MarCom Development Specialist Kari Curto

Marketing Comm. Coordinator Sarah Crowley

ADMINISTRATION

Executive VP/Operations Walter Manninen

Executive Assistant to the President/CEO Diane Martin

Financial Manager Cynthia Petrillo

Jr. Financial Analyst Hilary Smith

Billing Administrator Joyce Gillis

Facilities Specialist John Kelley

Office Services Coordinator Mary E. Wooldridge

INFORMATION SYSTEMS

VP/CIO David Woodall

Infrastructure Manager James C. Burgoyne

User Services Manager Ron Bettencourt

Senior User Services Specialist Michael Fahlsing

System Administrator Robert Reagan

User Support Specialists Jonathan Frappier, Paul Goddard

NEW BUSINESS DEVELOPMENT

VP, Business Development & Strategic Alliances Cheryl M. Hardy

Coordinator, Business Development Kelly Gabe

HUMAN RESOURCES

VP, Human Resources Patricia Reilly

Human Resources Manager Tanya Bureau

Human Resources Representative Beth Senges



C X O M E D I A I N C .

INTERNATIONAL DATA GROUP

President & CEO Kelly Conlin

Board Chairman Patrick J. McGovern



© CXO Media Inc.

How to Reach Us

E-mail letters@cio.com

Phone 508 872-0080

Fax 508 879-7784

Address CIO Magazine, CXO Media Inc.,
492 Old Connecticut Path, P.O. Box 9208,
Framingham, MA 01701-9208

Website www.cio.com

Topic Experts www.cio.com/online_beats2.html

Subscriber Services 800 788-4605, Fax 508 879-7899,
E-mail denisep@cio.com

Rights and Permission Karen J. Zirpola • 508 935-4366,
E-mail kzirpola@cio.com

IMAGINE ACCOMPLISHING MORE THAN YOU EVER THOUGHT POSSIBLE.



Call 1-800-TOSHIBA or visit a Toshiba reseller today. www.toshiba.com

**That's the experience of
Toshiba Mobile Computing
with Microsoft® Windows® XP
Professional and Mobile Intel®
Pentium® III Processors.**

Looking to take your mobile productivity to new extremes? Then get a Toshiba Mobile Computer with Microsoft Windows XP Professional and Mobile Intel Pentium III Processors – the best choices for mobile computing. Toshiba portables with Windows XP give you the productivity you need, with extended laptop capabilities, new ways of working remotely and effortless networking. Whether you're in the office, on the road, at home, or even at the beach, Windows XP Professional protects your data and personal files, while giving you expanded capabilities to accomplish more than you ever thought possible. Just another example of minds on the move.

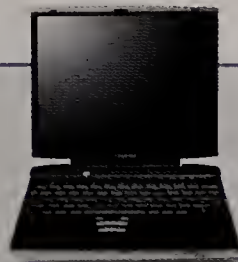
Tecra® 9000 Portable
The ultimate power and performance



Tecra 9000

- Mobile Intel® Pentium® III Processor - M, up to 1.2GHz
- Up to six ways to connect¹ – integrated Wi-Fi (802.11b wireless LAN), Bluetooth™ wireless technology, Ethernet LAN, fast IR, i.Link® (IEEE 1394) and modem
- Common accessories with Portégé 4000 and Satellite Pro 6000 including Advanced Port Replicator, SelectBay devices and memory
- Secure Digital Media slot for easy file transfers with other digital devices
- Brilliant 14.1" TFT display

Portégé® 4000 Portable
Perfect balance of ultraportability and performance



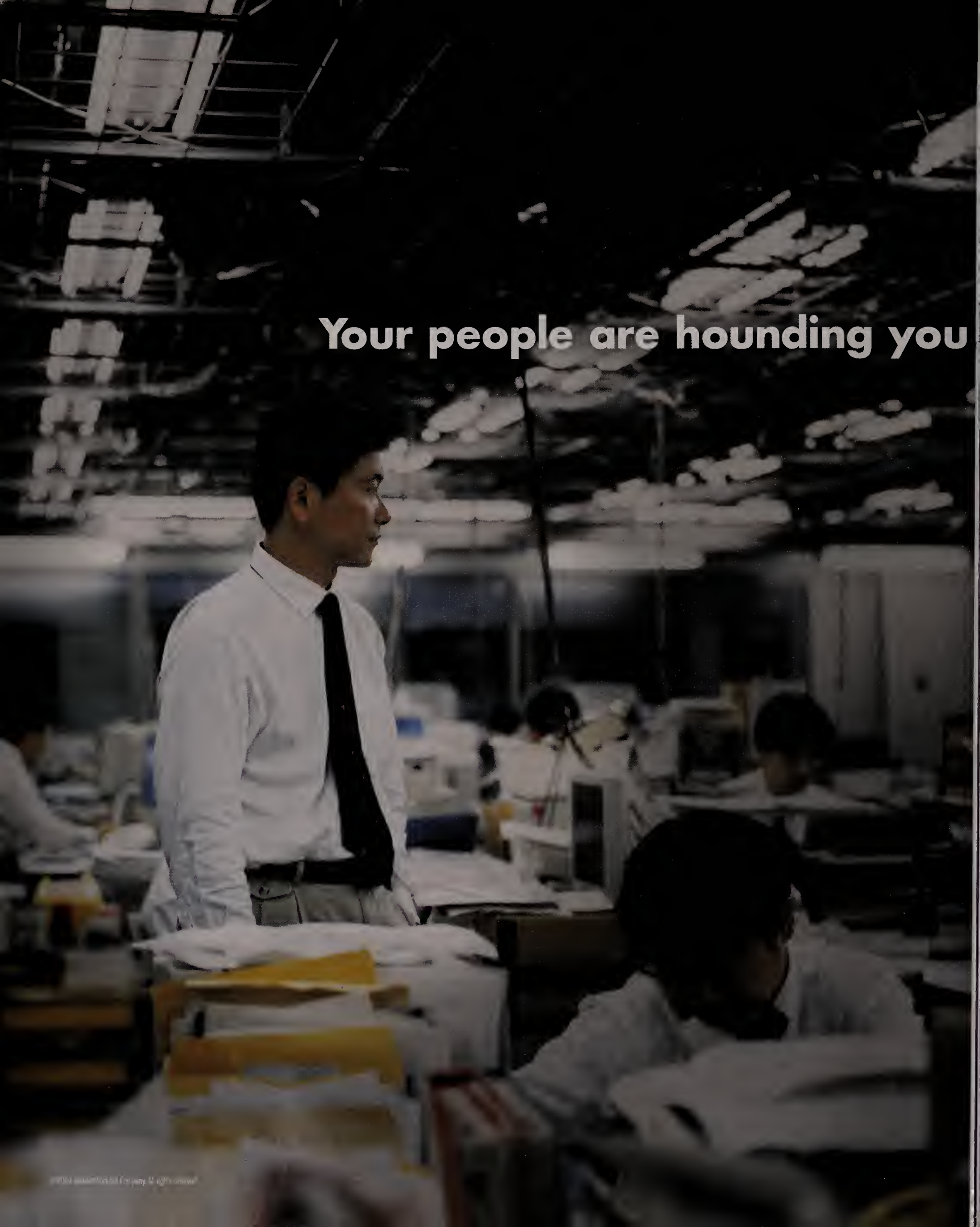
Satellite® Pro 6000 Portable
Best performance for the best price



TOSHIBA

Toshiba PC's use genuine Windows® Operating Systems
www.microsoft.com/piracy/howtotell

1. Integrated Wi-Fi and Bluetooth technology available as options at time of order. ©2002 Toshiba America Information Systems, Inc. Portégé, Tecra, Satellite Pro and SelectBay are registered trademarks of Toshiba America Information Systems, Inc. and/or Toshiba Corporation. Intel, the Intel Inside logo and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other countries. Bluetooth is a trademark owned by Bluetooth SIG, Inc. and used by Toshiba under license. All other products and names mentioned are the property of their respective owners. All specifications, software, prices, and availability are subject to change. All rights reserved.

A black and white photograph of a man in a white dress shirt and dark tie, standing in a cluttered office. He is looking off to the side with a thoughtful expression. The office is filled with desks, papers, and other workers in the background, creating a sense of a busy, overwhelming environment.

Your people are hounding you

for more storage space. Your support staff has just been cut. And you've already shot your IT budget for the year. You're not alone. The need for storage is skyrocketing, and more and more businesses are feeling the heat.

The problem is, spending a lot is not an option right now. And while budgets continue to shrink, requirements do not. Leaving you with the responsibility of finding a way to squeeze more efficiency out of the storage resources you already have.

It would help if your infrastructure were flexible enough to let you pull together all your mixed-vendor devices so you could freely move data between them. That way you could scale your existing capacity to match your company's unpredictable storage demands.

HP's answer to the challenge is Federated Storage Area Management (FSAM), an inventive approach that ensures you get the most out of your past, present and future investments. We start by helping you manage your entire network's storage resources—including legacy and multi-vendor hardware—from the convenience of a single console. All without adding more people.

HP infrastructure solutions—servers, software, storage, services and beyond—are engineered for the real world of business. Because the last time we checked, that's where we all work. Call 1.800.HPASKME, ext. 246. Or visit www.hp.com/go/infrastructure.

Infrastructure: it starts with you.



trendlines

the **NEW** the **HOT** the **UNEXPECTED**

Edited by Lafe Low

CAREER

Good Job Hunting *By Jeffrey Seglin*

IN THIS TURBULENT MARKETPLACE, it's no surprise that many people are scouting for new opportunities before their job hits the chopping block. If you're one of them, here are some tactics to make sure you don't jeopardize your current job in the process. Because your staff may be thinking along the same lines, you might also want to leave this article where they'll find it.



Respect your current employer. Avoid using huge chunks of your workday for your search. It's unfair to your current employer, and "[your prospective employer is] going to think less of you for dissing your current employer," says Laurel Touby, founder and CEO of Mediabistro.com, a media industry job-search website. Touby also warns against using company supplies, or searching the Internet at the office.

Be selective about the interviews you schedule. Don't rush off too quickly to interviews. You may find you've wasted your time. An initial phone conversation off-hours is a sensible first step.

Plan on being discovered. "Accept the fact that your employer may find out," says John A. Challenger, CEO of Challenger, Gray & Christmas, a Chicago-based outplacement company. Rehearse what you'll say if your employer asks you about your job-search.

Allow time for the search. "You have to commit to this process as if it were a second job," says Touby. Give yourself plenty of time to find the right position and expect it to take at least three to six months. "Don't do it out of desperation. Do it before you need to."

Network like crazy. "Social, professional and charity groups are filled with working people. Talk to everyone," says Challenger. Touby suggests you establish "weak ties," friends or associates of your own friends or associates. Distant connections can seem more credible as references for a job, she says.

Whatever else you do, Touby says, "don't emphasize your weaknesses or the company's problems," she advises. When the inevitable question comes about what went wrong on past jobs, remember, the real question is, What did you learn from the experience?

CIO.com

The **CIO WANTED** section has listings of companies looking for senior-level IT executives. Visit jobs.cio.com.

Finally, a Vendor Tells the Truth

“As I mentioned in the voice mail I left Thursday afternoon, [our company] offers collaboration software for technical content exchange, and primary customers are manufacturers and engineers. Customers find that the [product] software *increases* time to market.”

—The above voice-mail message was received in our office (the names have been removed to protect the guilty)



**Snap-on has the best tools
for diagnosing, aligning, and
tightening pretty much anything.
Like say, their productivity.**

As you read this ad, someone is buying a Snap-on tool — from either a Snap-on dealer, a sales rep, or online. With 80,000 customers now buying over the web, Snap-on needs a clear understanding of its click stream data. So this global leader turned to Cognos, the global leader in business intelligence.

Cognos helps Snap-on turn its masses of web data into actionable information. Like segmenting its customers, refining the product mix, and increasing the profitability of that mix. Information that allows for maximum productivity. So that this 81-year-old company can make fast, smart decisions, and remain the world's premier tool and equipment company for another 81 years.

Cognos — the business intelligence inside the world's most intelligent businesses.

NETWORKS

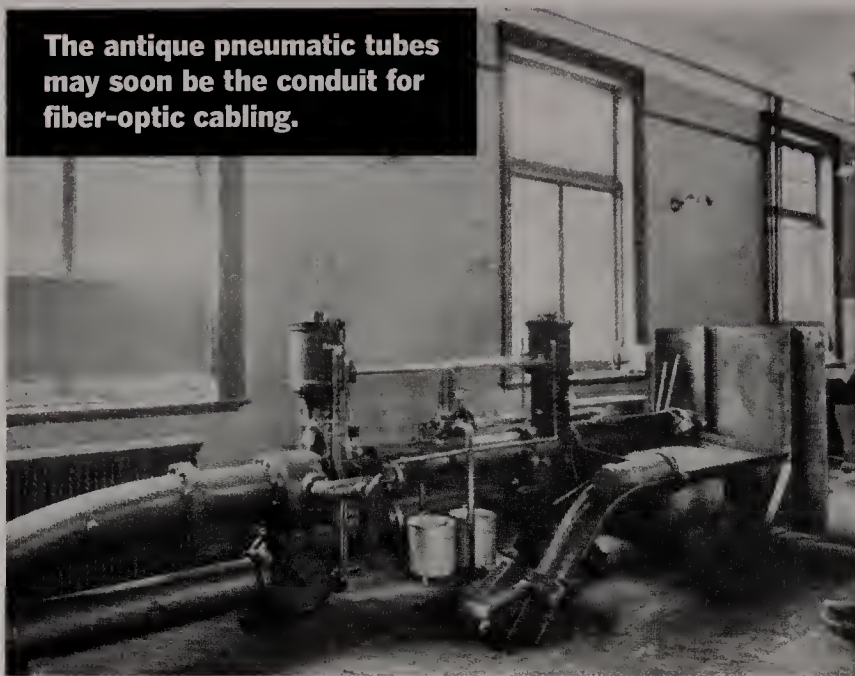
Pipe Dreams

By Stewart L. Deck

RANDOLPH STARK HAD a wiring dilemma. A year ago, he was looking for an inexpensive way to connect two buildings in New York City with a fiber-optic link. A dim memory clicked in—something about underground conduit tubes.

A bit of legwork and research at the New York Public Library, the post office and the Smithsonian confirmed that in the late 1890s, New York City was one of five U.S. cities that built pneumatic tube systems to help carry parcels of mail around town.

The antique pneumatic tubes may soon be the conduit for fiber-optic cabling.



Sifting through documents in the National Archives turned up the blueprints for New York City's 27-mile system. Six months later, the 26-year-old Stark had patented the idea of installing fiber-optic cable in these 8-inch-diameter, cast-iron subterranean pipes. He estimates that what cost \$4 million to build 100 years ago would now run

close to \$40 million, which makes his idea to use the already existing infrastructure fiscally attractive.

Until 1953, the pipes were leased by the post office from the private New York Mail and Newspaper Transportation Co. "The city still has a few questions about who owns them and is clarifying their legal status," Stark says. Progress has been understandably delayed by the terrorist attacks last September.

Nevertheless, Stark's company, Neutron Media, has been consulting with potential tele-

com partners on projects to lay the fiber-optic cabling in New York City. Stark also plans to take his idea to Boston, Chicago, Philadelphia and St. Louis (the other "tubed" cities in the United States) and then overseas. "Pneumatic tube systems are everywhere—in Paris, around Europe and in South America," Stark says.

HOT TOPIC



I.T. VALUE

Nonprofits Need Metrics Too

By Katherine Noyes

PROVING THE VALUE of IT investments is hard enough for companies. The bottom line looms as the ultimate measuring stick. It's an even bigger challenge for nonprofit organizations, but it isn't any less important. This year CIO received several Enterprise

Value Award applications from nonprofit groups, but the value metrics for many of them weren't quite what our judges were looking for. (See Page 48 for the beginning of our Enterprise Value Awards coverage.) We spoke with long-time judge Doug Barker, vice president and CIO for The Nature Conservancy in Arlington, Va., about the importance of valuation and metrics for nonprofit organizations.

CIO: What kind of valuation techniques do you think most nonprofits are using today?

Barker: On the whole, I think nonprofits are behind the curve on this one. There are some industry-standard, basic measures that work for part of the IT value equation, such as cost reductions, operational efficiencies or user satisfac-

tion, but they don't really get at the core strategic value of IT. This is an area that many nonprofits, as well as some for-profits, are just starting to look at.

Do you think it's more difficult for nonprofits than for-profits to demonstrate IT value?

Yes. In general, for-profits have it easier in that their bottom line can be measured in dollars. Nonprofits often have more of a struggle to develop and track meaningful measures of value. This really depends on the mission of the nonprofit and what metrics there are for measuring its impact.

What recommendations would you make to nonprofits hoping to win an Enterprise Value Award in the future?

Be as specific as you can. At the onset of the project, look closely at exactly what you're trying to achieve. Establish and start to track as many meaningful metrics as reasonably possible. Include all relevant details on things such as cost savings, increased user satisfaction and so on. Most important, if at all possible, provide details on the strategic impact of the system on your bottom line—your organization's mission—however you measure it.

HOW DID SALESFORCE.COM ADD MORE CUSTOMERS IN THE PAST TWO YEARS THAN ANY OTHER CRM COMPANY?

Is Siebel 7.0 too Little, too Late?

...Siebel faces increasingly strong competition from ... competitors such as salesforce.com ... Siebel is known for lengthy and expensive implementations.

Hurwitz Group, Trendwatch

"Six months and half-a-million dollars later, companies that chose traditional client/server CRM vendors still had nothing to show for it. With salesforce.com, we have results."

Michael Blumenthal

Vice President and Chief Technology Officer, Essex Corporation

"With the help of salesforce.com, we are a more successful enterprise. It gives us a more coherent culture and makes us more competitive. It has been bottom-line profitable for us within six months. I just don't see how you can help but make money using this product."

Donald Putnam

Chairman, Putnam Lovell Securities

In less than two years, salesforce.com moved from start-up to number two in CRM customers served.* Where did the established CRM companies go wrong? Simple. By the time their customers bought all the hardware, installed the software, and completed customization, their businesses had changed. Given today's pressure on profits and revenues, business is moving to salesforce.com, the world's largest online customer relationship management service—including over 3,000 companies such as Adobe Systems, Autodesk, Wachovia and Siemens PT&D. See how fast your company can benefit. Call 1-800-NO-SOFTWARE, or visit www.salesforce.com and enter Promo Code Q0208 to activate your FREE 30-day test drive.

salesforce.com
#1 in Online CRM



SALES / SERVICE / MARKETING

By the Numbers

By Lorraine Cosgrove Ware

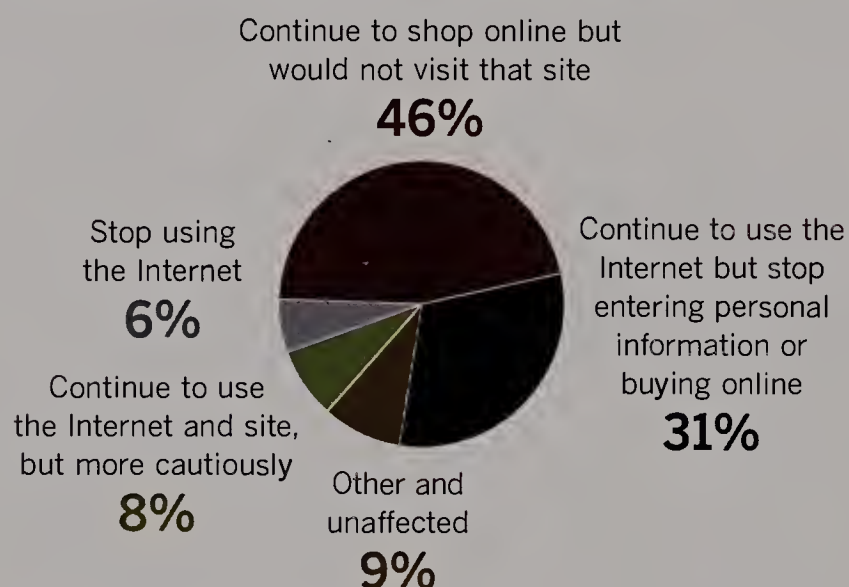
Invest in Privacy Policies and Keep Your Customers

CUSTOMER DATA IS VALUABLE. And through supply chain relationships, trading partnerships and collaborative commerce initiatives, companies have acquired a lot of it. However, according to CIO's August 2001 poll of 86 IT professionals, nearly

80 percent of those surveyed believe that companies should not sell customer data. To maintain loyalty, it's important to consider your customers and recognize what other companies are doing to ensure their privacy.

Consumers who feel a website has violated their privacy will shun the site.

If a website shared my personal data with other companies after it had promised not to, I **WOULD**:



Total number of IT respondents: 4,701

Source: Gartner/G2 Report "Consumers Have Fears About Online Privacy: Deal With It," May 2001

A CIO survey shows that IT execs overwhelmingly see privacy policies as a boon to e-commerce.

Will privacy regulations **HELP** or **HURT** e-commerce?

90%
of IT execs say
privacy regulations
HELP



10%
of IT execs say
privacy regulations
HURT

Total number of IT respondents: 86

And Yet...

While they claim privacy is important, **MORE THAN HALF** of respondents (**41 of 75**) have privacy policies covering companies that handle their data; **LESS THAN HALF** of respondents (**36 of 75**) have privacy policies that cover other companies in their supply chain. **MOST** (**68 of 75**) have privacy policies covering employees.

Source: CIO privacy survey, August 2001

Best Practices

Revamp your internal privacy policy.

Mandate that employees who use customer information first get permission or authorization from the CIO. Audit and record the use of customer databases, and insist that managers present a strong business case for accessing customer data.

Assign responsibility of customer privacy to the business and IT departments and hold them accountable.

Assign someone who is familiar with the business and understands technology to make the business rules and assign a technologist to implement them.

Create a central profile of the customer that can be accessed throughout your organization. Take customer complaints seriously and tie them into your

CRM system as much as possible.

Examine data sharing agreements with partners. Terms and conditions must be very clear and must protect your customer lists and anonymity. Often the exchange of information about customers is a key component of partnerships and affiliations. Determine what data should be shared, how to separate data that should not be shared and how to ensure data is not misused.



Sometimes

The Difference

Between Enjoyment And Annoyance

Is A Talented Quarter Turn.

**SMALL INVESTMENT
IN YOUR APPLICATIONS.**

**BIG IMPACT
ON YOUR BOTTOM LINE.**

Sometimes your IT infrastructure performs in perfect harmony. Other times, it's a step out of tune. Mercury Interactive can make it all work in concert. Our complete testing and application performance management solutions make it easy to evaluate and fine-tune your entire system. Giving you the maximum return on your existing investments. We've spent years optimizing business-critical applications for global organizations. And we can help ensure that your end users get the experience they expect. Plus, you'll get proof that your applications are running at their peak, 24 x 7. So visit www.mercuryinteractive.com and get your business and its infrastructure tuned to perfection.



MERCURY INTERACTIVE
Enterprise testing and performance management

INTERVIEW

Beware of the CRM Backlash

By Danielle Dunne

COMPANIES ARE TIRING of CRM projects, which are failing at a rate of 70 percent, but there is hope. Jill Dyché, author of *The CRM Handbook: A Business Guide to Customer Relationship Management* (Addison-Wesley, 2001), says CRM would work better if companies did a better job defining specific needs and customizing the technology to fit them. She spoke with *CIO* about CRM's problems and potential. (For the full text of this interview, go to www.cio.com/printlinks.)

CIO: Are we about to see a CRM backlash?

Dyché: It's already started. Companies are canceling CRM projects because budgets have gotten way out of whack, and they're renaming projects, shying away from the CRM acronym. They call it their corporate customer loyalty program, customer reengineering program, customer care initiative or even just campaign management. As these programs succeed, we'll see a readoption of the CRM term and an understanding of what it really means—a combination of process refinement, new information and organizational change.

What mistakes do companies make with CRM implementations?

The biggest mistake is to let technology features drive CRM functionality. Instead of defining the business problem up front then locating the technology to solve the problem, these companies are doing it backward. Another problem is thinking that because you have a customer database, you are doing CRM. Data warehousing and decision support are not equivalent to customer relationship management. Likewise, just reorganizing around a new customer focus doesn't mean you're doing CRM. CRM means changing your focus *and* the business processes to support it, and applying technologies to automate those new

processes. By nature, CRM is customized. There's no such thing as off-the-shelf CRM. That's a controversial statement, but it's true.

If companies already have off-the-shelf CRM, how can they make it work?

Back up and redefine the business problems, the ideal business processes and information to solve that problem, then automate the tool around the information and the business processes.

And what if a company is just starting a CRM project?



Jill Dyché contends that CRM projects would work better if companies did a better job defining their specific needs.

Define the problem, understand what's going to solve it and understand the functionality of the solution. Once you understand a requirement, you can find technologies to support that particular functionality. That's the right way to do it: the requirement, the functionality, then the tool.

NONPROFIT CRM

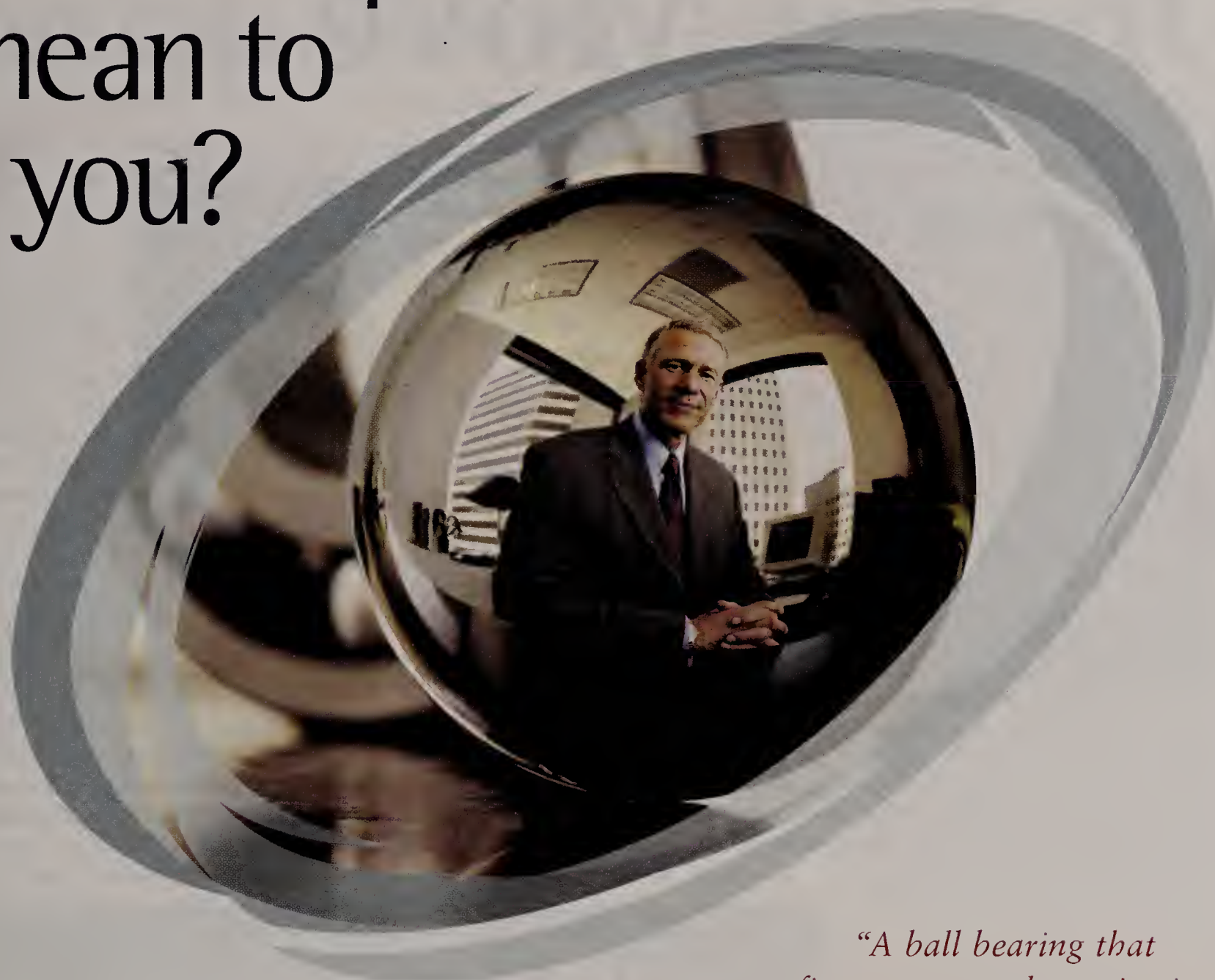
Donated Dollars Diverted

PRIOR TO SEPT. 11, Planned Parenthood, the international family planning and reproductive rights organization, appealed to its constituents for donations by warning them of the impact the Bush administration would have on *Roe v. Wade* and on funding for family planning. However, when the hijacked airliners hit the Twin Towers and the once-bumbling president rose to the occasion, Planned Parenthood had to quickly change its tactics. The flow of checks into Planned Parenthood's development office in Washington, D.C., was further reduced when the Brentwood postal facility was shut down during the anthrax scare.

As a result of the Sept. 11 attacks, the 86-year-old organization was facing a \$2 million budget shortfall. When it resumed its fund-raising and new member recruiting efforts last October, Planned Parenthood turned to the Internet and e-mail to appeal to its members, donors and prospects. It recommended people donate via its website (www.plannedparenthood.org), says Molly Smith Watson, Planned Parenthood's director of development for direct response.

Smith's group used e-mail to send letters on the fly in addition to developing and distributing letters, which can take up to three weeks to reach recipients. This way, Planned Parenthood was able to appeal to members for donations by stressing the importance of the services it provides, instead of criticizing the Bush administration during a time of national tragedy. "When events are changing very rapidly, it's hard to know the environment in which you're sending your message when it takes three weeks to develop a direct mail campaign," she says. "E-mail is received within minutes." —Meridith Levinson

What does product development mean to you?



"A ball bearing that fits my quarterly projections as tightly as it does my customer's assembly."

Why make product success more likely when you can make it inevitable? PTC solutions for collaborative product development help put engineers, suppliers, and customers behind one goal—winning at the product game. PTC is the world's largest software company with a total commitment to the product development process. Product development means business—and at PTC, it's our only business. 1.888.PTC.3776 or www.ptc.com

Product development means business.™



On the Move

Compiled by Tom Field

Shapiro Steps Down from Bowne



Judith Shapiro

Judith Shapiro made a unique career move three and a half years ago. She resigned from the board of directors of Bowne & Co. to become its CIO. She just took another big step by retiring at the end of 2001 to pursue freelance consulting, possible directorships and her fledgling golf game.

Shapiro, 54, has more than 25 years of IT management experience in large companies but wants to do something different now. A political science major in college ("I'm old enough that they didn't have computer science degrees when I went to school," she says), Shapiro started as a junior programmer at Johnson & Johnson. She spent about 15 years there, in both IT and sales. In 1993, Shapiro joined SmithKline Beecham as vice president of the information group, and then in 1995 she became senior vice president of MIS at Joseph E. Seagram & Sons.

While working at Seagram, Shapiro was appointed to the board of directors at Bowne, a 227-year-old, New York City-based information services company. "My goal was to broaden my general business experience and get much more involved in higher-level decisions," Shapiro says. A year later, Shapiro was so swept up by IT's potential at Bowne that she quit the board, quit Seagram and joined Bowne as its full-time CIO. "This was a company being reborn, and I was already involved in making the strategy," Shapiro says.

Shapiro says her biggest accomplishment at Bowne was transforming the IT organization from a cost center to a pay-for-use service provider. Looking ahead, she plans to work on her golf game at her new Florida condo, but she's not averse to stepping into a CEO or COO role, or even the right sales or marketing position.

"There's always a chance that I might end up in a corporate CIO role again, but I don't think I want to be CIO of a Fortune 500 company," she says. "I'd probably be more interested in [a smaller company] that wants strategic input and sees IT as an integral part of their business strategy."

Former CEO Takes CIO Post in Bloomington

Greg Volan isn't just the new CIO of the city of Bloomington, Ind. He's a new CIO, period. Volan comes to this job with a unique disadvantage. He has very little hands-on IT experience.

Volan is a lawyer by education, and spent time practicing law in Chicago before leaving three years ago to eventually become president and CEO of BlueMarble Telecom, a Bloomington-based ISP founded by his brother. At BlueMarble, Volan focused mainly on financial issues—not on IT. He



Greg Volan

left that job when the city's CIO position opened up last summer, and he saw an opportunity to put his legal and business experience to work in IT and municipal

government. "I can't manage any of the servers we have in the city," he says, "but I'm convinced I could learn."

That's where he feels he has a unique advantage, with an aptitude for learning and a résumé that's heavy in business and legal experience. "I focus on business goals first, not technology goals," he says. "It's not my goal to make sure the city has the latest and greatest toys. I want to do things to make work more efficient or provide new services to the departments and citizens."

News of Other Moves

Shaygan Kheradpir, president of Verizon's e-business unit, has been named CIO of the New York City-based telecommunications company, replacing Joseph Castellano, who retired on Dec. 31. Formerly vice president of IT for the enterprise systems unit at GTE, Kheradpir is expected to bring e-business and IT synergy to his new role, resulting in new products and services for Verizon customers.

John M. Coyle, former CIO of Vanion, has been named CIO of Trust Company of America, an Englewood, Colo.-based provider of ASP solutions for the independent registered investment adviser community.

Invitrogen has named **Bill Needles** vice president and CIO of the San Diego-based developer of research tools for biotechnology researchers and companies. Needles was formerly vice president of information technology at Lake Forest, Calif.-based hard drive manufacturer Western Digital.

Robert Dunst, former vice president of applications development at Safeway, has joined Albertson's as executive vice president and CIO of the Boise, Idaho-based food and drug retailer.

Step Five: Describing Your “CRM Classes”

THE CRM METADATA PROBLEM

The previous four steps laid the groundwork for launching a successful CRM initiative. Step 1 outlined the development of a business case accompanied by an ROI model that quantified costs and anticipated benefits. Step 2 was devoted to creating a clear picture of the enterprise's prospects and customers—who are they, where are they, where their data is located, and what channels are used to make purchases.

In Step 3, the IT organization defined the current and desired states, and identified technical gaps in order to deploy the infrastructure needed to support the CRM initiative. Step 4 was the creation of an actionable strategy of customer interaction policies to meet a company's ROI goals. The customer interaction policies developed in Step 4 depend on a unified understanding of key, common data classifications for CRM business definitions. Creating these business definitions, also called CRM classes, is the purpose of Step 5.

What Is the CRM Metadata Problem?

Companies have invested in many different kinds of CRM technologies and applications to improve customer relationships and to reduce marketing and sales expenses. However, CRM applications are generally installed to solve a particular problem (e.g., call resolution time) and are often not fully integrated with each other. Further, each business unit within a large enterprise typically customizes its CRM systems

to achieve its specific goals, and this customization results in business definitions and schemas optimized only for their business unit's systems.

As a result, there is a lack of common CRM business definitions across the organization. In a financial services company, for instance, the customer definition used by the brokerage unit may be at odds with that used by the retail banking side, making sharing information about a common customer difficult, if not impossible. The lack of common business definitions coupled with the proliferation of CRM systems leads to increased implementation and system maintenance costs, lower system quality, and the inability to share data across systems.

Metadata and CRM Classes Defined

To ensure that disparate CRM systems can work together, companies need a common set of CRM classes or business definitions that can be leveraged across all systems and business units. CRM classes start with metadata. Metadata is the underlying definition or description of the actual data; it's the data about the data. For example, in a database table, the metadata for a particular column might be “Last_Name,” and the actual data entry would be “Smith.”

A CRM class is the appropriate collection of attributes associated with a particular business definition such as “customer,” “product,” “account” or “promotion.” The classification “customer” may, at first glance, seem self-



evident—these are the people that buy a company's product or services. But the data definition of “customer” may vary widely, depending on the business unit or distribution channel, for instance.

Seven Steps to Successful CRM Infrastructure

A Guide for CIOs

This is the fifth in a series of articles presented by the Wheelhouse Corporation that describes seven key steps to implementing the technical infrastructure supporting customer relationship management (CRM) initiatives.

These articles are based on Wheelhouse's extensive experience as a CRM infrastructure provider helping Fortune 1000 companies deploy, manage and optimize marketing-driven CRM systems. Wheelhouse customers include such well-known companies as Cablevision Systems Corporation, J.P. Morgan Chase, Merrill Lynch, Trendwest Resorts, Inc., VoiceStream Wireless and Wells Fargo.



Custom Publishing

Advertising Supplement

Describing “CRM classes”

CRM Metadata Problem Solved

Companies need a way to define, build and reference CRM classes to create *standardized, reusable* metadata definitions for use enterprise-wide.

In order to realize the benefits of a CRM metadata management solution, the company's users should be able to:

- Capture, store, retrieve and centrally-manage metadata and mappings for sales, service and marketing applications
- Create reusable CRM classes or business definitions
- Map source data sets to class and to destination data sets
- Define transformations that occur between two data sets
- Provide the ability to reuse common transformations
- Export transformation logic to other data movement and management tools

Implementing such CRM metadata management solutions can result in significant benefits not only for a particular business unit but also for the whole enterprise. Some key benefits include:

- Decreased CRM system implementation time and maintenance costs
- Improved system quality
- Data sharing across systems, wherever they may reside
- Easy execution of system modifications
- Enterprise-wide standardization of key CRM business definitions
- A single repository that is the definitive source for system state
- Easy and direct access to data knowledge for business users

Managing CRM Infrastructures

The example of a large diversified financial services firm organized by division and business unit will illustrate the benefits of using a CRM metadata management solution. Historically, each business unit in that company selected its own CRM touch-point systems for managing customer relationships. When implementing these systems, each business unit designed its systems with customized definitions and schemas for common CRM classes. Thus, for example, the same customer could be described with different sets of metadata. That approach, while pro-

ducing some lift in customer response rates and retention for each business unit, precluded the sharing of data across the enterprise. Because of its inability to share data, it was forgoing many revenue-generating opportunities and driving up its marketing and sales costs through redundant activities.

To illustrate the problems created by a lack of common CRM business definitions, consider one business unit within a single division of the financial services company. In order to design the customer database for a new campaign management application, the business unit must:

- Develop the system's CRM business definitions for things like "customer," "transaction," "campaign"
- Design a schema based on those definitions and optimized for the application
- Document the sources necessary to create the CRM business definitions
- Write the specs for data set mappings and document the transformation rules
- Map the source data fields to the destination fields

In other words, this system requires a significant amount of work creating and implementing CRM business definitions—most of which would have been captured in the implementation of any other CRM system within that business unit.

By not taking a standardized approach to CRM system implementation and management through a CRM metadata management solution, companies risk the following:

- Each CRM system uses its own metadata definitions—providing no consistency across systems or correlations between systems
- Every new CRM system implementation involves creating new metadata definitions from scratch—prohibiting the company from benefiting from existing system intelligence
- Every new system implementation involves investigating potential data feeds from scratch—requiring resource-heavy data investigation efforts
- System mappings are not stored in one central location—making it impossible to determine definitive system state

- No mechanism for measuring the impact of data source additions or modifications—allowing potentially damaging and wide-reaching effects to ripple through your larger CRM environment
- No place to store information about "best" data sources or data quality—making data feed choices an isolated and potentially uninformed decision

So, what are the financial repercussions of this approach, and how does this impact an organization's bottom line? Without the ability to define, build and reference CRM classes to create standardized, reusable metadata definitions for use enterprise-wide, the company will be faced with higher implementation and system maintenance costs, a potential decline in system quality, expensive system modifications, and the increased potential for system downtime.

Developing common CRM business definitions is a very important building block in the effort to improve customer relationships. Once an organization is able to share common definitions and data about its customers—recognizing the whole customer—it will have the capability to: identify valuable up-sell and cross-sell opportunities across products and business units; enhance the chance of top-line revenue growth; coordinate the treatment and service customers receive through different channels—likely to improve retention efforts; and ensure consistency in the offers and messages that customers are sent—improving customer loyalty.

Coming up in the February 15 edition of *CIO*:

Step 6: Pilot, Test and Learn

To download an electronic version of this article, go to www.wheelhouse.com/articles.

To learn more about how we can help your business with CRM infrastructure innovation, call 781-505-3255 or e-mail us at info@wheelhouse.com.

WHEELHOUSE™



We Heard You.



You asked **CIO** to help educate senior management on the business value of technology.
We heard you. And we're pleased to announce DARWIN.

DARWIN is the first magazine, written, edited and calibrated for business executives. Every issue demystifies technology for non-technology executives and helps them understand, identify and support technology options to achieve your organizational goals.

DARWIN covers all the technologies executives need to know, not just the Internet. From application software to ASPs, from encryption to ERP, hardware to hosting,

VPNs to vendor relations — everything it takes to use technology to solve business challenges.

DARWIN is **FREE** to qualified non-technology executives. Tell your team to apply for a Free Subscription at **www.darwinmag.com/subscribe**

E - B U S I N E S S

Quick on the Draw

www.theattackof911.com, www.guesswhodidit.com. These are just some of the URLs born on Sept. 11. While most people spent that morning paralyzed by horror, others snapped up website names related to the events. BulkRegister, a domain name registrar headquartered in Baltimore, received at least 200 requests within 20 minutes of the first attack. From *www.freedomwillprevail.com* to *www.wherethehellwassuperman.com*, names reflected reactions to the events, says Tom Cunningham, CEO and founder. "There are some expressing anger, some trying to help, others selling T-shirts.... It reflects human nature. All within an hour."

BulkRegister, the fourth-largest domain name registrar, usually deals with more ordinary issues like reserving website names and protecting brand identities. However, notes Cunningham, big events always bring out the speculators, be they individuals or Web-hosting services trying to corner the market on the potential demand for sites such as *www.jetlinerhitsworldtradecenter.com* or *www.rememberseptember11th.org* (two more sites registered with BulkRegister). Some of the domain names were a presage to the news. Cunningham says people registered the names *www.osama-bin-laden.org* and *www.bombafghanistan.com* before officials even stated those parties were involved. "It's fascinating," he adds, "that some people's first impulse is to register domain names rather than call mom."

[Editor's note: While all these sites were registered almost immediately following the attacks, as of press time several of the sites led nowhere or had no content.]

—Sandy Kendall

I N F O R M A T I O N M A N A G E M E N T

A Little Knowledge Deemed a Dangerous Thing

IN MORE INNOCENT TIMES, public agencies that wanted to shine made information—lots of it—available on their websites. That all changed on Sept. 11, as jittery CIOs across the country considered how information could be misused, and adjusted their websites accordingly. The Department of Transportation pulled information about where natural gas pipelines were located, for instance, and the Bureau of Transportation Statistics removed information about the country's most heavily used roads. At the Pennsylvania Department of Environmental Protection (DEP), a 2002 Enterprise Value Awards winner (see Page 48 for more on this year's awards),

administrators quietly yanked a function that allowed visitors to view a map showing environmental problems by address, county or ZIP code.

Removing a feature that had impressed Enterprise Value Awards judges and citizens alike was not, understandably, something they were eager to discuss. Initially the department said the server had crashed and that the IT employees charged with fixing it had been called to antiterrorism duty instead. In fact, the antiterrorism duty included weeding out information that could be used by terrorists.

In late October, DEP Secretary David Hess said his department was still trying

to figure out how to respond to legitimate information requests without making public water supplies vulnerable. Eventually, he said, citizens would be able to make requests for sensitive materials online and be put through a screening process.

Public response, though, underscored how valuable the information had been for concerned citizens, journalists and activists, who called the department asking when service would be restored. "People are aggravated," says Nancie Imler, bureau director of program integration and effectiveness. "That's how you know somebody is using it—you get a lot of calls."

—Sarah D. Scalet

"CORE VALUE IS REALLY THE ESSENCE THAT DEFINES A COMPANY—THE SERVICES OR PRODUCTS THAT ARE [ITS] VERY FABRIC."

—Gregor Bailar, CIO, Capital One Financial

Seamless communications



Infonet offers multinationals
global communications that are snag-free.

As a successful multinational enterprise, it's important to have a reliable, high-quality communications partner to support your business around the world. You can confidently choose Infonet — recently rated “Best in Class” overall in Telemark’s latest survey, and also winner of the prestigious WCA Awards for “Best Customer Care” and “Best Carrier.” Using our unique consultative approach, Infonet has provided custom-crafted, value-added global communication solutions to our Clients for over 30 years. We maximise your network investment, using our fully managed end-to-end capabilities. And, we provide local support in nearly 70 countries and access in over 180. The result? Snag-free global communications that help your business run as smooth as silk.

infonet[®]
www.infonet.com

Asia-Pacific +65 838 5215

Europe, Middle East & Africa +32 2 627 39 11

Latin America +56 2 368 9400

North America +1 310 335 4700

Copyright ©2001 Infonet Services Corporation. All rights reserved. Printed in the U.S.A.



"I've got a hunch about this one."

INFRASTRUCTURE: THE MICKEY MANTLE ROOKIE CARD OF E-BUSINESS.

RETURN ON INVESTMENT. It's what turns a nickel investment in 1951 into a \$19,500 profit in 2001. It's the very principle motivating companies to make large investments in their infrastructure (hardware, software and services) every day.

A relatively small investment in IT equipment or software can provide a huge payday for companies that are looking to grow. Companies that want to streamline processes, attract new customers and expand services to existing customers.

The real issue lies in how to recognize the gem behind the stick of gum. There's no set formula. An e-business solution for a large bank will be different than one for the automotive industry or the retail sector. If your company is going to prosper, you'll need help identifying your optimum investment.

Of course, you can realize high returns by simply cutting costs. But then again, you could hit a home run by investing in open standards with Linux®-enabled servers that scale on a simple pay-as-you-grow basis.

You could focus your spending on innovative and cost-cutting IBM software such as Tivoli® and WebSphere®. Or you could speak to IBM Global Services about implementing Return on Web Investment (ROWI) methods. They help balance your spending by providing a thorough framework to evaluate your Web, IT and general business investments.

So unless you have a "hunch" about this one, call us at 800 426-7080 (ask for Invest) or visit us at ibm.com/e-business/roi for our latest white paper, "ROI Methodology for Evaluating e-business Infrastructure."



Total Leadership

In Rough Waters

When your company is in trouble, it takes a special touch to lead well

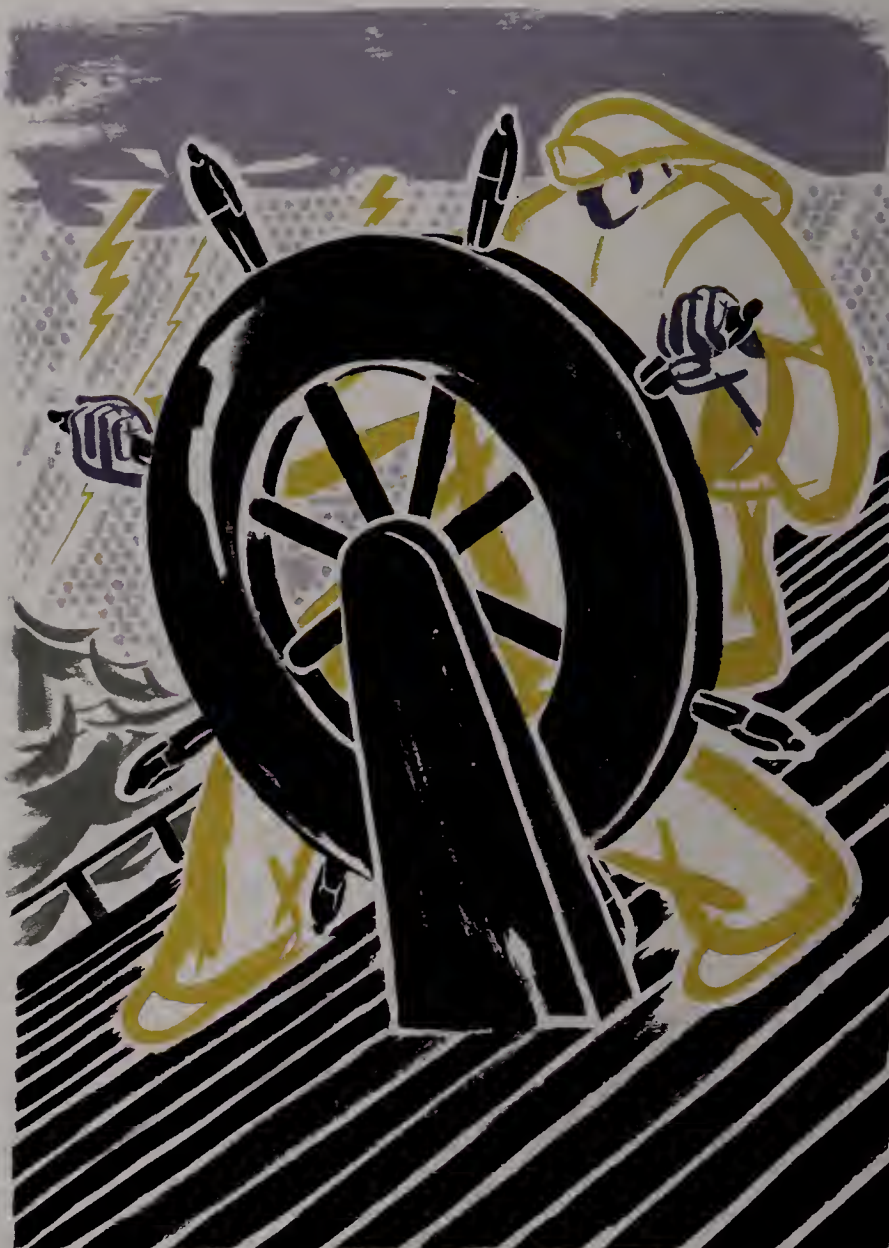
BY PATRICIA WALLINGTON

REVENUE IS DOWN. Profits are under pressure. Expenses are being cut. Rumors of layoffs abound. Your company is in trouble! You're worried about your own job. How can you possibly be an effective leader under these circumstances?

First, understand that you're not alone. Many companies and their leaders are learning to deal with these stressful times. Be sure to tap into that experience. Second, smooth seas never made a good sailor—difficult times test a leader's true mettle. View these rough waters as a chance to expand your leadership skills for an environment that may prevail for some time. Here are some guideposts to follow.

Wear Two Hats

Now more than ever it is necessary to wear two hats—your business leader hat and your personal hat. This will enable you to separate yourself and your own concerns from your role as leader. Clearly there will be actions, events and circumstances that will be upsetting to you personally. Discipline yourself to deal with them privately. Publicly showing your distress will spread that anxiety throughout your organization. Your role



as leader is to provide a productive environment, as free from stress as possible, even under difficult conditions.

Be Visible

In this environment, confidentiality is difficult to maintain. Rumors will run rampant. Every action, word or look takes on meaning for someone. Interpretations will sometimes border on the bizarre. Yet it is especially vital that you be visible to the whole organization during this time. Maintain a calm exterior and communicate often. Walk the halls, talk to people in their offices, eat lunch in the company dining room. Consider using a "hotline" to respond to frequently asked questions.

Stick to the Facts

Be as honest as you can with your people. Don't try to hide the business conditions. Tell it to them straight. Let them know

ILLUSTRATION BY ALEX NABAUM



©2001 Avaya Inc. All rights reserved. The Avaya logo is a trademark of Avaya Inc.

You speak to a server *It recognizes you and actually knows how to help.*

Imagine how many customers your company could help with a network this smart. It's possible when Avaya transforms your voice and data systems by getting them working together. Reliably. Securely. With our innovations in voice and in-depth expertise in data, you'll continually build better relationships. Find out why more than 90% of the Fortune 500 use Avaya communications to power their business, visit avaya.com/nowone.

AVAYA

COMMUNICATION WITHOUT BOUNDARIES

about the plans for improving conditions. Employees need the information that will enable them to understand the potential impact on their lives. Without facts, people will speculate scenarios that are generally worse than the actual conditions. The effect on productivity can be devastating.

Know How to Let Go

Cutbacks, downsizing, rightsizing, restructuring. Lots of words are used to try to ease the sting of layoffs. It seems almost inevitable these days that you will be faced with having to implement a plan to reduce the size of your organization. This may be the most difficult action you will have to take. How you execute it will have a big impact not just on those who must

amount of time in the presence of your employees. Listen and *respond* to their ideas. Pay as well as you can. Find nonmonetary rewards to express your appreciation for their efforts.

Help them prepare for the future. By offering suggestions for the new opportunities that will arise when prosperity returns, you'll help build the optimism they need to recover.

Focus on Essentials

Rally the organization around some doable business goals. Keep people focused on the here and now of your organization's mission. Do the best job possible. This is your company. Survival depends on your efforts. Be creative to find ways to do more with less. Changes to business processes and the use of technology—

IT's expertise—are crucial now, so you have a real chance to make an impact.

Portraying a calm, positive outlook will take real effort. Find ways to have fun, on and off the job.

leave the organization but also on those who stay. From experience I have culled a few lessons that may be helpful.

■ **Pick the time as carefully as you can.** Avoid Fridays and holidays. For three years in a row, one company I worked for spent months on the analysis and organizational details of the layoffs and announced them to individuals just before the holidays in December. Bad move. The individual layoffs were devastating enough, but the erosion of employee loyalty and productivity that resulted was even more severe.

■ **Make skill the prime criterion.** Keep as many of the critical skills as possible. When there are fewer people, everyone needs to be able to pull their own weight, and then some. Protecting your friends will not help get the work done.

■ **Be flexible.** Be empathetic to individuals' needs as often as you can. When faced with shutting down a business, I needed some key employees to stay long enough to fulfill the remaining contracts. We were able to negotiate a unique package for each person that addressed her needs specifically. They all stayed to the end, and we parted with good feelings. At our farewell party we awarded purple ribbons to everyone. Sometimes hokey is OK!

Reward Survivors

We used to have a saying in the oil business: "When things are going up, everyone looks up; when things are going down, everyone looks down." This is probably a good description of morale in a company facing hard times. Work doggedly to improve morale. Those who remain will feel like survivors. They will be overworked as they meet the challenges of doing the work of their departed colleagues.

Make sure you communicate. Spend a disproportionate

amount of time in the presence of your employees. Listen and *respond* to their ideas. Pay as well as you can. Find nonmonetary rewards to express your appreciation for their efforts.

Avoid Key Blunders

No matter how bad the news, some things are never a good idea.

- **Do not panic!** If you do, try not to show it.
- **Keep your head.** Avoid making decisions based on emotion rather than logic and facts.
- **Tell it first.** Never let your employees hear the news from outside sources if you can help it.
- **Do not be bitter.** Life is sometimes harder than we like it to be. Bitterness only makes it worse.
- **Keep a thick skin.** Resentment will be directed at you in your role as leader. Do not take it personally.
- **Guilty as charged?** You are not the perpetrator here. Do not allow yourself to fall into this guilt trap.
- **Leave it at work.** Try not to take the stress of the day into your family life.

Now one final word: Change, even negative change, brings opportunity. Scarcity of resources and talent allows new roles, new responsibilities and a chance to demonstrate more capability. Take advantage of it! **CIO**

What leadership topics would you like to read more about? Let us know at leadership@cio.com. Before retiring in 1999, Patricia Wallington was corporate vice president and CIO at Xerox. Wallington is now president of CIO Associates in Sarasota, Fla.



PHOTO BY FURNALD/GRAY



AND YOU THOUGHT ALL WE MAKE IN MICHIGAN IS CARS.

We also make and commercialize biotechnology breakthroughs, like the world's first bio-artificial kidney.

This groundbreaking feat of tissue engineering is the result of research at the University of Michigan, funded by venture capitalists and commercialization by Nephros Therapeutics.

This invention may soon be saving thousands of patients with acute renal failure while reducing overall costs of healthcare.

Don't be surprised this giant step was made in Michigan. We're not only the proud home of America's auto innovators, we're now groundbreakers of America's new technology industries, like biotechnology.

This is just one example. For more information call 1.800.946.6829 or visit www.michigan.org.

www.michigan.org



MICHIGAN | GREAT LAKES. GREAT LOCATION.

CXO Perspectives

Views from the Executive Suite

How to Partner with Your CEO

Business success depends on a good CEO-CIO relationship. Here's what it takes to make that happen.

BY JACK BRENNAN

WHETHER YOUR TITLE is CIO, CTO or some other variation, one of the highest-stakes business relationships you have is with your CEO. In an era in which technology has become a key strategic tool, an effective working relationship between the head of the company and the head of technology operations is vital to business success.

As CEO for the Vanguard Group, I've long been a believer in technology. My interest in IT dates back to the early 1980s, when I was involved in budget planning for Vanguard. Though we are an investment-management company first and foremost, it was clear then that Vanguard needed to transform itself into a technology company as well. Today, technology accounts for more than 40 percent of our operating budget. This year, we'll spend 20 times as much on systems development as we do on advertising. Technology is a vital competitive weapon and a strategic tool for Vanguard. In fact, no single part of our company could function without IT.

I'd like to share my thoughts with you about what makes a successful CEO-CIO partnership, but first I should make a few disclaimers about my views on IT. As the head of an investment-



management company, I see business issues through service-industry glasses. I also have a bias regarding organizational structures—our company takes a centralized and matrix approach to technology. We believe that there are powerful organizational advantages to structuring IS as a “center of excellence,” with key personnel also reporting to business areas.

A Model Partnership

Unfortunately, as I write this column, our organization is mourning the loss of our longtime CIO, Robert A. DiStefano, who died unexpectedly in July at age 52. Bob was much loved and respected at Vanguard, and he was also admired throughout the industry—in fact, he was frequently quoted in this magazine. Bob and I worked together for 17 years in one of the longest CEO-CIO partnerships I've heard of. Our one-on-one sessions every other week typically lasted three hours and

ILLUSTRATION BY JAMES O'BRIEN



WHEN FAILURE IS NOT AN OPTION

With 15 years of advancements in data protection and recovery, it's no wonder IS/IT managers prefer DLTape™ technology 5:1. Ultra-powerful Super DLTape™ products are available as stand-alone, autoloader, library, array and SAN solutions. To find a dependable backup solution sure to match your company's needs, go to www.superdlttape.com.

ranged across a spectrum of business topics, from technology to people issues to competitive developments.

In the course of choosing Bob's successor, I gave a lot of thought to what makes a successful CEO-CIO partnership. Based on this experience, I offer this recipe.

■ **The CIO should report to the CEO.** When technology was a back-office function, it may have made sense for the CIO to report to the CFO. But technology has become a strategic tool, and the leader of technology operations should be positioned in the organization accordingly.

■ **The CEO should be engaged and interested in technology.** A CIO can't succeed unless the leader of the organization is known to be in the CIO's corner. That said, it's the CIO's responsibility to educate the CEO and provide reasons to become engaged. (In other words, no whining!)

■ **The CIO should be engaged and interested in the business.** Just as the CIO must educate the CEO about technology, the CEO has a reciprocal responsibility to see that the CIO is thinking about the business. At Vanguard, we say that getting IT right is all about getting *business* technology right.

■ **The CEO-CIO relationship must be an active engagement.** The partnership won't be strong without an investment of substantial one-on-one time to discuss business strategy and technology. An active engagement is mutually beneficial because of the exchange of perspectives that it provides. The CIO has a unique vantage point as a vendor to every business unit in the organization. He is also a change agent. What's more, the CIO's

knows that the CEO supports both the technology program and the CIO's control of that program, budgetary hostage-taking is less likely.

The Right Stuff

Of course, there's more to succeeding as a CIO than just building a good relationship with the CEO. From my vantage point, being an effective CIO is as much a matter of disposition, intellectual bent and people skills as it is a matter of credentials.

At the risk of provoking a flood of e-mails to the editor, I'll avow my long-held view that technology credentials are necessary but not sufficient to make a good CIO. I think all successful CIOs exhibit three character traits.

1. **A good CIO must be comfortable with ambiguity.** He is both a service provider to internal clients and a steward of corporate resources—a position that requires difficult decisions as well as political acumen.

2. **A good CIO must have a voracious appetite for knowledge about the business.** Instead of seeing herself as a technology guru, the CIO must focus on technology in the context of the competitive landscape and business strategy.

3. **A good CIO must inspire the trust of the CEO and other senior members of the CEO's team.** If the CIO tells the unvarnished truth on daily operational issues and strategic matters, she will earn that trust.

By the way, a CIO who has those three traits does not necessarily need to be a technology specialist too. At Vanguard, we've

assigned "poets"—high-potential people with business backgrounds but little technology experience—to challenging IS management positions, and we've been delighted with the results. Conversely, two former leaders of our systems development area have gone on to head important business areas: One of them now leads our companywide training

and development program, and the other leads the business segment that administers employer-sponsored 401(k) plans, a business with an asset base of \$125 billion. Their IT backgrounds serve them well in using technology to further business goals.

Career moves between the business side of the company and IS have succeeded for Vanguard because business and technology meet the most success when they work hand in hand. And ultimately, isn't that quest for success what the CEO-CIO relationship is all about? **CIO**

If everyone knows that the CEO supports both the technology program and the CIO's control of that program, budgetary hostage-taking is less likely.

unique perch within the organization can yield telling insights about individual talent so that he can aid the CEO in leadership development and succession planning.

■ **The CEO must be able to count on the CIO to demonstrate fiscal discipline.** In any company, the risk of spending money unwisely is probably greater in IS than in any other business area. Who is immune to the appeal of new toys? Unfortunately, we've all spent money on IT projects that we have regretted later.

■ **The CEO must support the CIO visibly, both within the senior leadership team and across the organization as a whole.** When times are tough, companies are always itching to cut technology spending. Businesspeople tend to think they could do IT more cheaply and more efficiently than the IT folks can. But cutbacks in technology spending are often shortsighted. If everyone

What topic would you like to see discussed from the CEO's perspective? Let us know at cxoperspectives@cio.com. Jack Brennan is chairman and CEO for the Vanguard Group in Malvern, Pa.



SWALLOWS ENORMOUS E-MAIL ATTACHMENTS WHOLE.

E-mail attachments have finally met their match. Introducing the MaxAttach™ NAS 6000. The only NAS storage server available with fully integrated MaxAttach EMS software. Together they create a powerful e-mail storage solution that expands the capacity of your mail server—improving performance, and simplifying e-mail management. And because the NAS 6000 is based on a Windows platform, you get the manageability of a server for the cost of an appliance. Not to mention the priceless luxury of not having to nag your users about their e-mail storage. For prices and info go to: www.maxtor.com/netstor

NAS 6000 Storage Server

- Highly scalable: 1.9TB to 5.7TB
- Multiplatform file sharing
- One year, next business day on-site service
- Starting at under \$30,000

Powered by



Microsoft
**Windows
Powered**

STORAGE YOU CAN USE

Maxtor®

NEW ORDERS OF

The Winners

Dow Chemical

Dow's Web-based training system serves a cast of thousands.

Page 56

Pennsylvania Department of Environmental Protection

This government agency used to spend its time conducting inspections and levying fines. Now an integrated system lets it pursue its real mission—protecting the environment. Page 62

Enterprise Rent-A-Car

An automated system has streamlined the cumbersome replacement rental process and cemented Enterprise's standing in the industry. Page 72

Michigan Department of Transportation

By automating its collection of inspection data, Michigan cuts the cost of building roads and bridges. Page 82

SBC Communications

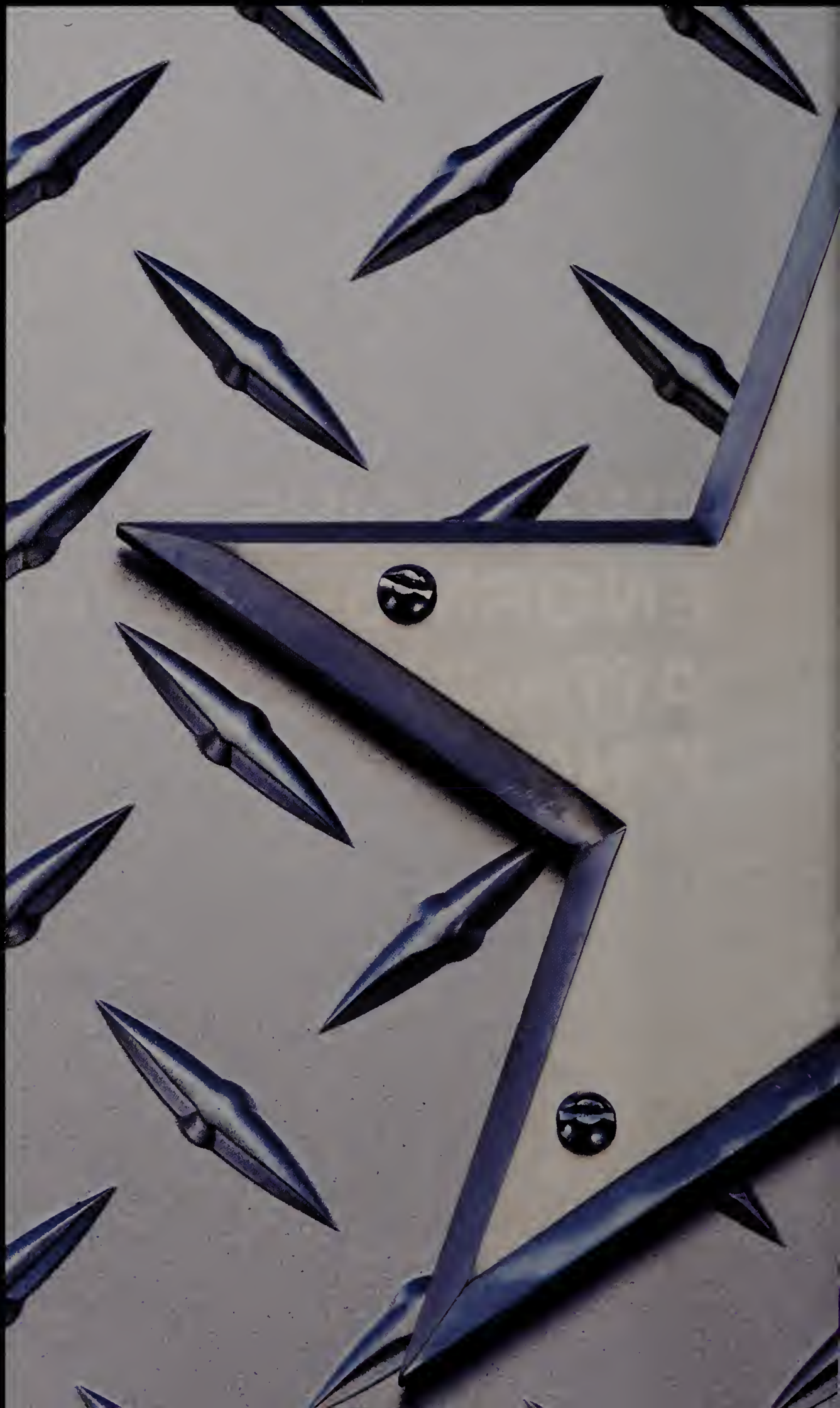
SBC's network management tools do more than help the telecommunications company gauge capacity; they improve customer service and reduce costs as well. Page 92

The Process

Enterprise Value Awards judges and review board members overcame logistical challenges to assess the value of this year's winning systems. Page 98

Photograph by
Pete McArthur

CONTENTS



MAGNITUDE

BY
KATHERINE
NOYES

A true assessment of IT value today must include its power to transform enterprises, industries and society as a whole

When *CIO* launched its Enterprise Value Awards program 10 years ago, IT value was a very different animal. Back then, we measured it in terms of dollars saved—whether by cutting costs, reducing head count, improving efficiency—or some such indicator. The metrics we used were those of the bottom

line, easy for bean counters and chief executives to understand.

But the nature of IT value has changed. Today, the value IT adds to the enterprise is both greater and, ironically, more difficult to measure (and consequently harder to comprehend) than ever before. Today, the value derived from information technology goes beyond trimming costs and boosting productivity. IT is now a catalyst that triggers massive, beneficial transformations in organizations, markets, industries and even the world. It changes the way companies do business.

"In the past we thought of IT as an enabler of business processes—we looked for productivity and efficiency gains," says judge Rebecca Rhoads, vice president and CIO for Raytheon in Lexington, Mass. "What we are seeing now is transformation." Indeed, as companies reach out to new markets and tap into new revenue streams, the definition of what it means to be in business is changing. Technology still produces significant economic savings, of course, but now it goes beyond that to help achieve strategic goals that in these competitive times often make the difference between success and failure, survival and extinction. In short, the units of measurement for IT value are now an order of magnitude larger than they were 10 years ago. Today, IT delivers value right to the core.

Now that IT has extended its influence so deeply and so pervasively, handing out Enterprise Value Awards has become a more intricate, more challenging endeavor. "This year [the judging process] was particularly fun and stimulating," says Doug Barker, vice president and CIO for The Nature Conservancy in Arlington, Va., and a longtime judge for the awards. "I have watched IT value over the last several years progress from supporting a business, to enabling a business, to really being a driver of business."

This year we honor five organizations

with Enterprise Value Awards: Dow Chemical, Enterprise Rent-A-Car, the Michigan Department of Transportation, the Pennsylvania Department of Environmental Protection and SBC Communications. Each of these winning companies exemplifies in its own way just how far we've come.

That Was Then

In 1993, CIO honored six organizations for their ability to create value using IT. The honorees were a diverse group spanning multiple industries and in both public and private sectors. Yet in virtually every case the value created by

"In the past, we thought of IT as an enabler of business processes—we looked for productivity and efficiency gains. What we're seeing now is transformation."

—REBECCA RHOADS, VP AND CIO, RAYTHEON

the honorees' systems came in the form of dollars and cents. Several of the honored systems included first-time applications of technology to previously manual and paper-based processes, and the rewards the organizations subsequently reaped were a testament to the benefits of business process automation.

Take the Perrier Group of America. By using IT to support its shift to regionalization in the early 1990s, the company earned a net ROI of \$11.4 million in the first year and \$15.4 million annually after that. The combination of route-management software, handheld computers, common databases, and networked links to newly regionalized data and support centers enabled Perrier to reduce its head count, cut its operating and facilities costs, and increase productivity. (See "A Watertight Case," January 1993.)

That's definitely nothing to sneeze at. But during the next few years, we started to honor companies for more and more strategic uses of IT. As early as 1995, we began to find organizations using a combination of technology and IT-business partnerships to effect real business transformations. Enterprise Value Award winner and parking lot operator APCOA, for example, implemented distributed technology that not only achieved an ROI of 248 percent, it also improved customer service and helped position the company to take advantage of new opportunities for expansion without having to extend its infrastructure. (See

"Garage Sales," Jan. 15, 1995, at www.cio.com/printlinks.) Meanwhile, Hyatt Hotels developed a central reservation system that was so successful, it allowed the company to enter a new line of business—selling the technology to other hotel chains. (See "Satisfying the Inn Crowd," Jan. 15, 1995, at www.cio.com/printlinks.)

Everyone likes to save money. But it has become eminently clear that strategic applications are where IT's real value lies.

This Is Now

We received more than 40 applications for the 2002 Enterprise Value Awards, and it was immediately obvious how much higher the bar has been raised. Rare were the entries touting returns from simple business-process automation. Much more common were applications of technolo-

FREE APC Multiple Outlet Rack-Mounted Strip

to the first
100 entrants.

All entrants
will receive APC's
"Solutions for Business Networks".



Be one of the first 100 to mail or fax this completed coupon, or contact APC, and enter to win a FREE APC Multiple Outlet Rack-Mounted Strip! All entrants will receive APC's "Solutions for Business Networks". Better yet, enter today at the APC Web site!

Key Code

<http://promo.apcc.com> d580y

(888) 289-APCC x6322 • FAX: (401) 788-2797

APC
Legendary Reliability™

FREE APC Multiple Outlet Rack-Mounted Strip for the first 100 entrants.

All entrants will receive APC's "Solutions for Business Networks."

☐ **YES!** Enter me to win 1 of 100 FREE APC Multiple Outlet Rack-Mounted Strips and send me APC's "Solutions for Business Networks." (See APC Web site for complete promotion details)

☐ **NO,** I'm not interested at this time, but please add me to your mailing list.



Name: _____ Title: _____

Company: _____

Address: _____ Address 2: _____

City/Town: _____ State: _____ Zip: _____ Country: _____

Phone: _____ Fax: _____ E-mail: _____

☐ **Yes!** Send me more information via e-mail and sign me up for APC PowerNews e-mail newsletter.

Key Code d580y

What type of availability solution do you need?

- ☐ UPS: 0-16kVA (Single Phase) ☐ UPS: 10-80kVA (3 Phase AC) ☐ UPS: 80+ kVA (3 Phase AC) ☐ DC Power
☐ Network Enclosures and Racks ☐ Precision Air Conditioning ☐ Monitoring and Management ☐ Cables/Wires
☐ Mobile Protection ☐ Surge Protection ☐ UPS Upgrade ☐ Don't know

Purchase timeframe? ☐ < 1 Month ☐ 1-3 Months ☐ 3-12 Months ☐ 1 Yr. Plus ☐ Don't know

You are (check 1): ☐ Home/Home Office ☐ Business (<1000 employees) ☐ Large Corp. (>1000 employees)
☐ Gov't, Education, Public Org. ☐ APC Sellers & Partners

©2002 APC. All trademarks are the property of their owners. APC4A1EB-US_2C • E-mail: apcinfo@apcc.com • 132 Fairgrounds Road, West Kingston, RI 02892 USA



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 36 WEST KINGSTON, RI

POSTAGE WILL BE PAID BY ADDRESSEE

APC[®]

AMERICAN POWER CONVERSION

KEY CODE: d580y

DEPARTMENT: B

132 FAIRGROUNDS ROAD

PO BOX 278

WEST KINGSTON RI 02892-9920



How to Contact APC

Call: (888) 289-APCC

*use the extension on the
reverse side*

Fax: (401) 788-2797

Visit: <http://promo.apcc.com>

*use the key code on the reverse
side*

APC[®]

Legendary Reliability™



Look for these other great rack accessories from APC:

Fixed and Sliding Shelves
Cable Management Shelves
Fans
Keyboards/Keyboard Drawers
Stabilization Kits
Power Distribution Units

Visit www.apc.com for more information!

APC: UPSs and So Much More

APC, the name you trust for power protection, also offers a comprehensive line of non-proprietary racks, rack accessories and management tools that provide you the flexibility to implement a highly available multi-vendor environment. APC allows you to create a rack environment with the level of availability you

require, and provides you with the accessories and management tools to maintain that level of availability over time. Our expert Configure-to-Order Team can custom tailor a complete rack-mount solution to suit your specific requirements. Contact APC today and protect your rack application with Legendary Reliability™.

NetShelter® VX Enclosures

Next generation, high-quality enclosures

- Fully ventilated front and rear doors with enhanced ventilation pattern maximize airflow
- Overhead, base and side cable access provides easy, integrated cable management
- Rear Cabling Channel (42" deep versions only) allows for easy installation, access and serviceability of both data cables and power distribution
- Available in multiple configurations: 35.5" deep, 42" deep, beige or black

NEW!



NetShelter® Open Frame Racks

Economical open frame solutions for wiring closets and data center networking applications

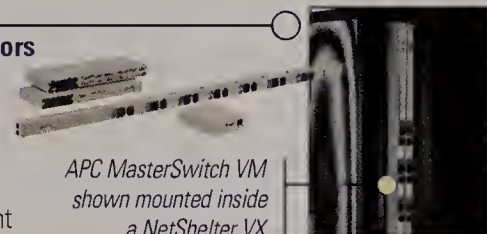
- Designed to accommodate networking devices such as hubs, routers and switches
- Industry standard 7' high design provides 45U of equipment mounting space
- Self-squaring allows one-person assembly
- Made of high-strength 6061-T6 structural-grade aluminum



MasterSwitch™ Series

Remote power distribution for network administrators

- Users can configure the sequence in which power is provided to individual receptacles upon start-up
- Built-in Ethernet interface for direct connection to LAN
- Individually control 8 on-board power outlets for complete and flexible management of attached equipment



APC MasterSwitch VM shown mounted inside a NetShelter VX

KVM Switches

Server switches designed to increase system availability and manageability

- 4 and 8 port models available; expandable to support up to 64 servers
- Models available that support Sun, USB and PC servers simultaneously
- Built-in scanning feature allows you to automatically monitor your computers without intervention
- On Screen Display (OSD) functionality, advanced security features



Environmental Monitoring Unit

UPS card for network administrators to monitor environmental conditions in rack, computer room and data center environments

- Sensors continuously monitor the temperature and humidity of equipment
- Four user-definable external inputs allow use with sensors for fire, water, smoke, unauthorized entry and physical security
- Communicates information in a variety of formats to ensure that your application is supported



ProtectNet®

Data line surge suppressors for comprehensive network/PC system protection

- Protects against surges and electrostatic discharge traveling through data lines



LCD Monitors

High quality rack-mount LCD monitors designed to maximize space in a data center environment

- Provides optimal functionality while utilizing only 1U (1.75") of rack space
- Includes 15" LCD monitor, integrated keyboard and integrated pointing device



NEW!

Cables

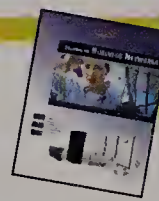
- APC offers a comprehensive line of cables and connectivity solutions to fulfill the connectivity requirements of any application or environment



FREE APC Multiple Outlet Rack-mounted strip for the first 100 entrants!

To order: Visit <http://promo.apc.com> Key Code d580y • Call 888-289-APCC x6322 • Fax 401-788-2797

All entrants will receive APC's "Solutions for Business Networks"



APC
Legendary Reliability™

gies that have transformed the way business is done. With such an array of impressive contenders, choosing winners was tougher than ever. (See “How We Picked the Winners,” Page 98.)

Not only has the bar for consideration for an Enterprise Value Award moved higher, making the strategic use of IT almost a given, but our definition of IT value has of necessity become broader as well. In past years our discussions of IT value focused mostly on the benefits (whether financial or, later, more strategic) gained by the individual enterprise implementing the particular application or system. Today we are extending our examination of value to an organization’s business partners, to its industry and to society as a whole.

The Pennsylvania Department of Environmental Protection, one of this year’s winners, is such an example. By creating

available online. This is IT at work for the planet we live on; it’s hard to imagine an impact more critical than that. Little wonder that the technology has attracted the interest of more than a dozen other states. (See “Working in a Deeper Shade of Green,” Page 62.)

This year, two public organizations won awards, and the second was the Michigan Department of Transportation (MDOT). (See “Paving Over Paperwork,” Page 82.) With its FieldManager road construction software, developed through an innovative public-private partnership, the MDOT has been able to support road and bridge construction projects that have tripled in value to \$1.5 billion a year—even as it downsized the department from 5,000 to 3,000 employees. The technology has also been licensed for use in several other states, thus helping to set a new standard and transform this formerly paper-laden industry.

impressive scale of the system won it the unanimous approval of the Enterprise Value Awards judges.

Customer service is at the heart of Enterprise Rent-A-Car’s winning system, which has brought online the previously labor-intensive process of arranging replacement rental cars for drivers whose own cars have been damaged in accidents. By enabling insurance companies, Enterprise branches and auto-body shops to manage that entire slice of the rental cycle electronically, the Web-based system has made life so much easier for Enterprise’s insurance company customers that several of them have been willing to enter preferred provider relationships with the company. (See “How to Stay Ahead of the Curve,” Page 72.)

SBC Communications’ winning system also provides a lesson in delivering core value. In response to network shortages that were making it difficult to serve customers, the telecom company implemented a network management environment that lets engineers proactively monitor capabilities so that shortages are minimized and customer orders for new lines or services can be more consistently met. Not only that, the company estimates the system has saved it \$22.3 million in direct and indirect operating costs. When fully deployed, SBC expects it to create savings of up

to \$10 million per year. (See “More Lines, Less Waiting,” Page 92.) By delivering a system to ensure the quality and consistency of its central offering—telecommunications services—SBC focused on its core business and used IT to help make it top-notch.

And Now This

The tremendous impact and quality of these winning systems, as well as the many other great contenders we reviewed, could make it

Our definition of IT value has become broader. We are extending it beyond the benefits gained by the individual enterprise to an organization’s business partners, to its industry and to society as a whole.

top 10 lists of violations and making them available through its winning data integration system, the department has been able to reduce the runoff of sediment caused by surface mining operations—one of the state’s most common environmental problems and a major threat to its streams. This newfound ability to work proactively to serve its mission is one of many benefits of the department’s system. At the same time, the technology is helping to inform and serve the citizens of Pennsylvania, with state and local environmental information

Dow Chemical’s winning Web-based training delivery system, Learn@dow.now, has helped transform the giant company from a fragmented, locally managed organization into a streamlined global entity. By providing consistent training to all 50,000 employees worldwide, the system has helped Dow reorganize around global business units and flatten its organizational structure—not to mention it has saved the company \$30 million in its first full year of operation. (See “The World’s Biggest Classroom,” Page 56.) The value and

You won't see the next network security threat coming.



STAT

When the next Code Red, Goner or Nimda comes along, STAT could be the difference between a crippled system and one that's completely unaffected.

But STAT[®] will.

Arming yourself against the next threat requires more than vigilance. It requires a **new level of defense**. At Harris, we know; for more than 25 years, we've helped keep government networks secure — and now we're helping businesses stay ahead of the enemy with our STAT intrusion prevention tools. For example, STAT Neutralizer[™] **proactively protects servers and workstations** by using behavioral analysis to prevent intrusions and malicious activities from taking place. STAT Neutralizer provides a new layer of security to defend your network during its most vulnerable time — **before an anti-virus update can be downloaded**. And that's just the beginning of what STAT can do. To start winning the war on cyberattacks, call 1-888-725-STAT (7828) today or visit our website.

next level solutions

STAT ANALYZER

STAT NEUTRALIZER

STAT SCANNER

cio.STATonline.com

HARRIS

tempting for the IT community to relax a bit. After all those battles with CEOs, CFOs, resistant managers and users, few today would dispute the value of IT to the enterprise—and the world. Some might think that—given the recent storms in both our political and economic climates—it's time for a rest, a time to stop pushing and innovating so hard. A time to ease up in the long campaign to measure, prove and communicate the value of IT.

While that thinking would be understandable, acting on it would be a mistake. Times have gotten much tougher since these winning systems were implemented (by requirement, they're all at least 2 years old), and the result has been a general hunkering down in organizations and a renewed focus on the basics—efficiency, effectiveness, core value. IT is uniquely suited to bring organizations closer to those fundamentals, but given the increasing emphasis on financial fundamentals, it had better be able to prove that that's what it's doing.

"I think businesses are going to be much more focused on their core promises to their customers and their employees," says judge Gregor Bailar, former Nasdaq CIO and executive vice president of IT operations, now CIO of Capital One Financial in Falls Church, Va. "I think value will be measured by how close you stay to those promises."

"People want to return to fundamentals," says judge John Glaser, vice president and CIO of Partners HealthCare System in Boston. In business, that means "reducing costs, achieving competitive positions and managing relationships. We'll be less willing to embark on things that are more speculative on a much more distant future, so we will see a retraction back to the core."

For IT, that means that investments going forward must be more tightly linked than ever to core business processes, and

any core value delivered must be demonstrated clearly.

At the same time, corporations will increasingly rely on IT to help drive the business, as we've already seen to some extent in this year's winning systems. As markets tighten and competition increases,

number of companies collecting revenue from selling the technology they developed, it raises a new question: Is the IT value these companies are claiming still the product of the application of IT to their business problems, or are they now essentially IT vendors and therefore ineligible?

Our notions of what it means to be in business are changing. The lines dividing companies, customers, business partners, industries and even competitors are blurring, and that's due in large part to IT.

IT will have to carry its own weight by uncovering new sources of revenue. In fact, one of the best means of accomplishing that may very well be selling systems developed for internal use to other companies. That's a trend that seems to have taken a strong hold over the years, and we saw further evidence of it this year in winners Pennsylvania Department of Environmental Protection and the MDOT, as well as a host of other contenders.

Indeed, this year's judges got into a lengthy debate about that trend and the gray area it creates in the context of the Enterprise Value Awards. IT vendors have never been considered eligible to win the award for the technology products they sell. Rather, recipients have been companies in other industries that used IT in some way that delivered value to them either financially or strategically.

Now that we're seeing an increasing

"Value is becoming grayer and more multifaceted, and the separation between traditional business using traditional IT to make the traditional business better is getting fuzzier and weaker because now they're actually in the IT business," says Glaser.

Companies following this trend are essentially automating their core competencies and services, and that may become a key competitive differentiator in coming years. "That's where the innovation in the industry is coming from—that's where the most value has been created," says Barker.

In addition to altering how we define IT value, this trend also changes our notions of what it means to be in business in a particular industry. The lines dividing companies, customers, business partners, industries and even competitors are blurring, and that's due in large part to IT.

That may make life more difficult for our Enterprise Value Awards judges, as they try to pick out the top tier amid the context of current trends, but it promises a world of opportunity for CIOs to help shape the future of their organizations. **CIO**

cio.com

Are you maximizing your ROI? Check out the new **I.T. VALUE RESEARCH CENTER** at www.cio.com/value.

How is IT bringing value to your organization? Tell IT Value Editor Katherine Noyes at knoyes@cio.com.



WE DIDN'T JUST JUMP ON THE
INFRASTRUCTURE BANDWAGON.
WE BUILT IT.

It's time to set the record straight. Long before our competitors even added the word "infrastructure" to their vocabulary, we were busy creating it. Since we first launched Unicenter®, it has become the de facto global standard for managing eBusiness infrastructure. But we didn't stop there—we're also the world leader in security and storage software. Every day, our software handles over 180 million transactions, protects \$50 billion in wire transfers and stores 40 million security exchanges. Expertise doesn't happen overnight. It's taken 25 years of hard work and leadership to get to be the best. So when we say you can trust every one of our 18,000 employees around the world to deliver the software and service that your eBusiness' success depends on, we really mean it.



Computer Associates™

HELLO TOMORROW | WE ARE COMPUTER ASSOCIATES | THE SOFTWARE THAT MANAGES eBUSINESS™

ca.com

©2001 Computer Associates International, Inc. (CA). All trademarks, trade names, service marks, and logos referenced herein belong to their respective companies.

HEADQUARTERS
Midland, Mich.

CORE BUSINESS
Chemical, plastic and agricultural products and services company

BUSINESS UNIT
Global Human Resources

FINANCIALS
\$21.5 billion in revenues for the first three quarters of 2001

EMPLOYEES
50,000

URL
www.dow.com

COMPANY PROFILE

Dow Chemical's Web-based training delivery system, Learn@dow.now, saved the company \$30 million in its first full year of operation and supported the company's reorganization around global business units.

WHY THEY WON

Winner | THE DOW CHEMICAL CO.

THE WORLD'S BIGGEST CLASSROOM

Dow's Web-based training system serves a cast of thousands

BY STEPHANIE OVERBY

In 2000, Dow Chemical fired 61 employees and took lesser disciplinary measures against another 540 for sending offensive e-mail over company servers. Not convinced that simply monitoring future employee e-mail was an appropriate response to the situation, then CEO Bill Stavropoulos (now chairman) mandated that all 40,000 Dow employees across 70 countries receive six hours of training on workplace respect and responsibility. This comprehensive response to a pervasive workplace problem would be prohibitively expensive for most global organizations. But Dow was able to do it by delivering the training through a Web-

Photo by
David Baditoi



CIO David Kepler (left) and Larry Washington, corporate vice president of environment, health and safety, HR and public affairs, say that Learn@dow.now has helped turn Dow into a truly global company.

based training system, Learn@dow.now, launched a year prior.

Between October 2000 and February 2001, more than 40,000 employees took and passed the course—a two-hour overview and a four-hour class in their native language—and Dow saved nearly \$2.7 million in the process. It saved \$162,000 on manual record-keeping of class completions, \$300,000 on classroom facilities and trainers, \$1 million on course hand-

\$844,279 saved on manual record-keeping, \$3.1 million on training delivery costs, \$5.2 million in reduced class materials and \$20.8 million on salaries (with Web-based training requiring 40 percent to 60 percent less time than its classroom equivalent).

But it wasn't simply cost savings or convenience that wowed CIO's Enterprise Value Awards judges enough to unanimously declare Learn@dow.now a winner. It was the strength of Dow's commitment to its e-learn-

with the Midland, Mich., headquarters, even though similar business processes were taking place at all three. That fractured management approach affected training. A technician in Greenburg, La., and her counterpart in Joliet, Ill., might have had to complete the same compliance training, but nothing was done to standardize its content or delivery.

As Dow Chemical executives decided to restructure around business processes rather than locale, HR processes like training had to be changed. It was a huge organizational change for the company, and technology was a major enabler of the transformation. David E. Kepler, CIO and corporate vice president of e-business, took the first step to support the new global entity by installing the PeopleSoft 7 Human Resources Management System (HRMS) in 1996. The following year, Kepler's team joined with human resources to create an intranet-based HR system called the People Success Finder, which offered employees access to career information, training resources, compensation figures and job opportunities. Within the People Success Finder, the company launched Learn@dow.now in January 1999 to deliver standardized, online training.

Learn@dow.now didn't succeed immediately, however. When the global learning team launched it, employees were instructed to take a course *via* the online learning system to *learn how to use* the online learning system. "We made a mistake in thinking the system was easy to use," explains Lyn Hamilton, a Dalton, Ga.-based global learning leader for Dow Chemical, who worked on the project. So Dow initiated live Learn@dow.now classroom demonstrations and published a quick reference guide for employees to keep by their computer.

A Global Classroom

Learn@dow.now has grown quickly and is now one of the most comprehensive Web-based learning tools around. Current courses range from cost accounting and business ethics to chem-

"It's more effective and cheaper in many cases to deliver this kind of learning online."

—LARRY WASHINGTON, CORPORATE VICE PRESIDENT OF ENVIRONMENT, HEALTH AND SAFETY, HUMAN RESOURCES AND PUBLIC AFFAIRS, DOW CHEMICAL

outs and \$1.2 million in salary savings, thanks to shorter training time. "What we've found is that it's more effective and cheaper in many cases to deliver this kind of learning online," says Larry Washington, corporate vice president of environment, health and safety, human resources and public affairs and a 32-year veteran of Dow.

The system also delivers a tremendous payback in mergers and acquisitions, because rapid assimilation of new employees is key to unlocking the value in acquisitions. Manufacturing-site employees joining Dow must complete a three-part operations discipline course. By taking the training online, 11,000 employees so far have completed their course work in 30 percent of the time normally required in traditional classroom settings, and Dow has saved \$2 million in training costs. Learn@dow.now has also been the platform for 27,000 employees completing the company's environmental health and safety work processes courses, saving \$6 million. Safety incidents have declined as a result, even as the number of Dow employees has grown 25 percent.

Dow spent \$1.3 million on the e-learning system. In the first full year of operation, the company estimates the total cost benefits of Learn@dow.now at \$30 million—

ing venture. When it was launched, Learn@dow.now offered 15 course titles. By the end of its first year, the company was delivering 98 course titles and had recorded 24,492 course completions. In 2000, the system was offering 426 course options and boasted 208,464 completions. "What won them the award was the scale of the system," explains judge John Glaser, vice president and CIO of Partners HealthCare System in Boston. "The sheer number of classes that they've offered and the number of people that have been trained are remarkable. This award reflected a significant focus and organizational commitment on the part of Dow to move this out to a very diverse and global workforce."

History 101

The impetus for this online learning system was a cultural change at Dow. In 1995, executives wanted the now 104-year-old chemical company to begin to act more like the global company it had become. The company was organized around locations—what happened at the company's Cairo, Egypt, location was entirely separate from what occurred at its Horgen, Switzerland, offices, which had nothing much to do

Crystal Decisions, Crystal Reports, Crystal Enterprise, Crystal Analysis, and other registered trademarks or trademarks of Crystal Decisions, Inc. All other trademarks are the property of their respective owners.

WHAT KIND OF DECISIONS ARE REQUIRED IN TODAY'S BUSINESS CLIMATE? SMART ONES.

Arriving at a smart business decision can happen anywhere. But the process first requires information; information that needs to be gathered from multiple sources, then analyzed and shared before it can be used to your advantage.

The challenge today is twofold. One: how do you get the infrastructure in place to access disparate data sources and create and distribute actionable information? And, two: also meet the demands to reduce costs and increase productivity?

You turn to Crystal Decisions™. Our enterprise-wide reporting, analysis and web-based information delivery solutions have a proven track record of helping our customers better utilize information to competitive advantage and profit.

At Crystal Decisions, the makers of Crystal Reports®, we've met the standards of our key partners like SAP, IBM, Microsoft and Baan. We're confident we can meet yours. To find out how, visit us at: www.crystaldecisions.com/ent/006/ or call 1-866-821-3525.

Access. Analyze. Report. Share.™


crystal decisions™
A SEAGATE COMPANY

COST: \$1.3 million in initial costs; \$600,000 in maintenance costs (licensing and operation)

HARDWARE: Three servers—each a Compaq ProLiant Pentium III Xeon 700MHz/2M Rack Model (512MB) with four processors—connected by a common 100 megabit switch. The first server contains the TopClass application, the second is used as media storage, and the third server is used for the Oracle database.

SOFTWARE: WBT Systems TopClass Suite 4.2.4 Web-based training management system; Oracle 8.06, Internet Explorer 5.00.2, Network TCP/IP, Infrastructure NT-5 with IIS-5.0 and Front Page Extension, linked to PeopleSoft 7 HRMS

NETWORK: Global WANs supporting voice, video and audio with a Remote Access Service that allows user to dial in to the Dow intranet

THE WINNING SYSTEM

VALUE STRATEGY

David E. Kepler, CIO and corporate vice president of e-business at Dow Chemical, has employed value-based management since 1995. He and his IT team move a project forward in phases, document its cost and value, provide a three-year investment plan, and track it at a portfolio level. Value management helped Kepler scope the Learn@dow.now project. "We started with the business result that we wanted to achieve and then built the system necessary to achieve those results, so we did it in the most affordable way," Kepler says.

istry and hazardous materials handling—each one offered in Dutch, English, French, German, Italian, Portuguese and Spanish (with some available in Chinese, Indonesian, Japanese and Thai). Most classes require a post-test to determine if the employee has mastered the subject matter for certification. When an employee finishes a class, a record of completion is automatically transferred to her permanent training file in PeopleSoft 7 HRMS. "It's important to look at how e-learning fits in with a company's global mission," explains Katherine Jones, managing director of enterprise business applications in the Palo Alto, Calif., office of the Aberdeen Group. "Anytime you have that many employees all over the world it's difficult to ensure the quality of education. They've definitely succeeded at that."

Employees appreciate the flexibility, control and convenience Learn@dow.now affords them. "You could move at your own pace," says two-year Dow employee Kellie Rogge, who works in business communications within Dow's Epoxy Products and Intermediates business unit and has taken several required courses and signed up for the popular Six Sigma training class. "And I don't have to spend an entire afternoon in a classroom."

Among the only complaints: Concentra-

Course originators conduct an assessment before bringing a class online to determine if Web-based training will be effective.

tion can be tough in the typical work environment. "Sometimes it's hard when you're sitting in a cubicle and there's all this activity around you, but it's pretty user-friendly," says Heather Dudley, who joined Dow as an office professional in the Global Purchasing Marine unit in March 2001 and has taken several optional software courses such as Microsoft Excel and PowerPoint.

CIO.com

Read how David Kepler honed his **LEADERSHIP SKILLS** at Dow. Go to www.cio.com/elearning.

For that reason and others, Dow leaders say some classes may never hit the intranet. Course originators conduct an assessment before bringing a class online to determine if Web-based training will be effective. Many classes, such as software training courses, are tailor-made for Internet delivery. Others, such as those on leadership, benefit from the classroom experience. But Dow does offer online pre- and post-assessment testing via Learn@dow.now for some in-person classes like safe driving, new employee orientation, purchasing and behavior-based performance. Extra prep or review time provided online helps instructors minimize the amount of time employees spend away from work.

As for the online respect and responsibility class, the value has gone beyond the several million dollars saved by delivering the information through Learn@dow.now. "We demonstrated commitment from the senior leadership to protect our values of respect for people and to take swift and decisive action where those values are compromised," says David Wilkins, Dow's director of global diversity. "And we used the best available technology to design and deliver this important information to our global population." **CIO**

Are you using IT to unify your workforce? Let Senior Writer Stephanie Overby know at soverby@cio.com.



Crystal Decisions, Crystal Reports, Crystal Enterprise, Crystal Analysis, are either a registered trademark or trademark of Crystal Decisions, Inc. All other trademarks or registered trademarks referenced are the property of their respective owners.

WHAT KIND OF DECISIONS DOES SAP MAKE? SMART ONES.

Arriving at a smart business decision can happen anywhere. But the process first requires information; information that needs to be gathered from multiple sources, then analyzed and shared before it can be used to

your advantage. SAP, the world leader in e-business platforms, is focussed on finding new ways to help their customers lower costs and increase revenues. That's why SAP chose Crystal Decisions™

web reporting technology and expertise – to help their customers better utilize information through formatted reporting for competitive advantage. Crystal Decisions, makers of

Crystal Reports®, met SAP's demanding standards. We're confident we can meet yours. To see how, call us at: 1-866-821-3525 or sign up for a seminar at: www.crystaldecisions.com/ent/006/

Access. Analyze. Report. Share.™


crystal decisions™
A SEAGATE COMPANY

HEADQUARTERS
Harrisburg, Pa.

CORE BUSINESS
Administering
environmental laws
and regulations

FINANCIALS
2001 budget:
\$816.7 million

EMPLOYEES
3,000 (75 in IT)

URL
www.dep.state.pa.us

COMPANY PROFILE

By reorganizing and providing integrated access to critical information, the Pennsylvania Department of Environmental Protection went beyond levying fines to proactively protecting the environment.

WHY THEY WON

Winner | PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

WORKING IN A DEEPER SHADE OF GREEN

This government agency used to spend its time conducting inspections and levying fines. Now an integrated system lets it pursue its real mission—protecting the environment.

BY SARAH D. SCALET

Five years ago, if hundreds of dead fish washed up on the banks of a river in Pennsylvania, the state's Department of Environmental Protection (DEP) had a lot more than an environmental emergency on its hands. It had a logistical nightmare. Inspectors had to make a flurry of telephone calls to offices that monitor different aspects of the environment—air quality, drinking water, waste management, mining and the like—to figure out what caused the problem. Meanwhile, as they wasted time and money trying to pull together the critical information

Photography by
Jim Graham



CIO Karen Bassett:
Pennsylvania made the
\$20 million investment
in eFACTS for its ability
to help the department
manage its workflow.

from disparate systems, more fish were dying.

No longer. "Now, if we see a segment of a stream that's impaired, we can pull up a GIS application and say, 'Show me all the facilities that we regulate that are upstream or downstream within five miles of this point,'" says CIO Karen Bassett. What's more, the data integration system that makes this efficiency possible is also helping prevent some problems from happening in the first place, as the department undergoes a radical change of mind-set, from one of merely conducting inspections and levying fines to proactively monitoring and caring for the environment.

The change in thinking hasn't been easy, but the technology is starting to pay off, with more informed employees, more focused outreach programs, better citizen participation and a software licensing agreement that could save the state hundreds of thousands of dollars.

CIO's panel of judges agreed that the system deserved a 2002 Enterprise Value Award, and the rest of the country has also made note of its significance: Kimberly Nelson, the department's former CIO, has been confirmed as CIO of the Environmental Protection Agency.



CIO Karen Bassett and department Secretary David Hess recall significant employee resistance early on in the eFACTS effort.

"You can't manage a program without information as basic as who is complying with the laws." —DAVID HESS, DEPARTMENT SECRETARY

"It's part of a whole revolution in government, particularly in the environmental realm, away from being punitive and trying to catch people after the fact, to more of a partnership model," says Enterprise Value Awards judge Doug Barker, vice president and CIO of The Nature Conservancy in Arlington, Va. "They're working with the community to make Pennsylvania a more livable state. It's really a win-win. The bottom line is this system will help prevent pollution, and that's in the best interest economically and in all ways for citizens, industry and government."

An Uphill Battle

The story begins in 1995, when former Gov. Tom Ridge—another Pennsylvanian tapped by the Bush administration, now serving as director of the Office of Homeland Security—took office and discovered that no one knew how many companies and governmental agencies were complying with environmental rules and regulations. "There was no measuring stick, there was nothing," says DEP Secretary David Hess, talking on his cell phone as he travels through the green hills of Pennsylvania, known as much for their

beauty as for the harsh mining and manufacturing that the state's economy relies on. "You can't manage a program without information as basic as who is complying with the laws."

At that time, each of the department's programs had its own systems, some of which were more technically sophisticated or widely used than others. After conducting an inspection of a manufacturing facility, for instance, a DEP employee might enter the results in a computer spreadsheet, write something down in a ledger—or not make detailed notes at all. That meant that someone who monitored, say, drinking water had no easy way to know if an organization had outstanding violations related to other kinds of pollution or in other parts of the state. Decisions to write a ticket or issue a new permit were made based more on gut instinct than on information.

So the department embarked on a

0% Financing!
Purchase a VPD-MX10, or select other Sony Professional Products between January 1, 2002 and March 31, 2002, and make no payments until January 2003*!

SONY®

making business pleasure



LOSE **5 lbs.** IN UNDER A MINUTE.

Simple. Leave your PC behind. You can, with the new VPD-MX10 SuperLite™ Projector. It incorporates Memory Stick® technology, so you can save your presentations and forget about lugging a laptop to your next meeting**. But don't be fooled because the VPD-MX10 is so small. It weighs in at just 4.6 lbs., yet this powerhouse delivers true XGA resolution, 1000 ANSI lumens brightness***, digital keystone adjustment and USB compatibility. The VPD-MX10 SuperLite Projector. A lighter, brighter idea from Sony.



For more information call **1-800-472-SONY**, ext. MX10.
Or visit **www.sony.com/projectors**

©2001 Sony Electronics Inc. All rights reserved. Reproduction in whole or in part without written permission is prohibited. Features and specifications are subject to change without notice. Sony, Memory Stick, Projector Station and SuperLite are trademarks of Sony. *Visit www.sonyfinancial.com for list of specific models and promotion terms and conditions. Financing available through Sony Financial Services, LLC **Memory Stick media is compatible with any PC with an optional PC card adaptor. ***ANSI lumen is a measuring method of the American National Standards Institute IT7.228. Since there is no uniform method of measuring brightness, specifications will vary among manufacturers.

COST: \$20 million for development and \$500,000 annual budget for maintenance and support

HARDWARE: Alpha Cluster

SOFTWARE: Oracle suite of products. Built using Oracle Designer 2000 and Developer 2000 tools. Uses Oracle Discoverer and Express Analyzer for creating ad hoc reports.

NETWORK: TCP/IP, both LAN and WAN services, and Ethernet. Also uses frame relay for remote offices.

THE WINNING SYSTEM

Within the Department of Environmental Protection, decisions about investments are made in a "sitting around the table" kind of way, CIO Karen Bassett says. "Anytime somebody comes up with a new IT project, we talk about why this is important to the agency. We don't say that the ROI has to pay off in three years, or we're not going to do something if we don't save \$10 million." Instead, decisions are based on the answers to informal questions like: Will the investment save money? How much staff time will it free up? Spending is prioritized based on which projects would benefit the largest number of people—either employees or citizens. The primary value of eFACTS, she says, is that it has improved the department's ability to manage its workflow.

VALUE STRATEGY

\$20 million project that eventually would be known as eFACTS: Environment, Facility, Application, Compliance Tracking System. The goal was to create integrated monitoring and management tools that would let employees manage their workflow, generate complex reports and view information spatially. As an added benefit, officials realized that much of that information could then be put online so that citizens who wanted to learn about pollution in their neighborhoods wouldn't have to sort through a dozen paper files at their local DEP office.

Not everyone was thrilled with the idea. Businesses were leery of what would be made available online and whether information would be misinterpreted. Department employees were skeptical too. Not only would eFACTS initially mean more work—learning a new system, tracking new data—but two previous efforts to integrate the agency's 17 data silos had failed.

Nevertheless, with the governor's full support, Hess and then CIO Nelson made it clear that failure was not an option. "We really threw home the point that this is the only tool we're going to allow them to have to track compliance," Hess says.

Nelson kept the planning process open by hosting dozens of roundtable meetings with employees, businesses and citizens. She also split the project into manageable chunks, including converting legacy data (completed in 1997), launching the public website (in 1998) and rolling the system out to the department's many programs.

One World

The system already has changed the way DEP employees work. For instance, they can make educated decisions about whether to approve each of the 20,000 permits DEP issues each year. "If you're getting ready to issue a permit to a facility in Meadville, it would be very useful to know if the owner had any problems at their other locations," Nelson says. "You're not going to call six different people each time you issue a permit. This way, you can just bring up the record and look."

Also, by using new top 10 lists of violations, staffers can focus their time and budget on the biggest challenges and prevent environmental problems from occurring. For example, the surface mining program discovered the most common violation was that companies were not constructing ponds to catch sediments and prevent them from clogging streams. In response, the department developed an education program to train bulldozer operators to do things correctly. The result: The number of violations dropped significantly, from 205 in 1996 to 119 in 2000.

There are still growing pains, to be sure. Tim Jolly, a compliance specialist with DEP's water management program, says that some

of the information he gathers is simply too complex to represent in a common system—for instance, ongoing violations that aren't solved in one visit. Nevertheless, eFACTS has momentum. "We actually have [DEP programs] volunteering" to start using eFACTS, says Nancie Imler, bureau director of program integration and effectiveness.

A licensing agreement may yield further payoffs. More than a dozen states interested in the software contacted the department, and Pennsylvania decided to turn the task of explaining it—and selling it—over to Compaq, which helped develop it. For each state Compaq signs on, the DEP gets \$250,000 in service credit.

Most important, perhaps, citizens are making use of the system. In October, the website had an average of 251 user sessions per day. Last July, the DEP unrolled an eNotice system, in which citizens can sign up to receive e-mails about permit applications in their neighborhood, and by November, 1,750 citizens had signed up for the service.

The value of eFACTS is "a terribly difficult thing to quantify," Nelson admits from her new office at the EPA in Washington, D.C. "It's a matter of the culture and the focus of the organization—is it going to be a problem-solving organization or a reactive, enforcement organization? If you want to be proactive, then you need information like this to make it happen." **CIO**

CIO.com

Visit our **GOVERNMENT AND I.T. POLICY RESEARCH CENTER** at www.cio.com/government.

How can IT help the environment? E-mail Senior Writer Sarah D. Scalet at sscalet@cio.com.

**You have a state-of-the-art company.
Isn't it time you had a state-of-the-art state?**



Introducing Illinois.
Advanced Resources for Advancing Business.

ILLINOIS. IT'S ALL RIGHT HERE.

Illinois understands how the merging of technology platforms is rapidly and radically altering the competitive landscape of virtually every industry. We've coined this the "Convergence Economy." And, under the direction of Governor George H. Ryan, we have the only program in the nation to help your business thrive in it.

How can Illinois help your company meet the burden of unrelenting economic and technology-driven change? By offering intelligent, coordinated access to all of the state's vast technological and financial assets. Illinois operates like a business to provide the edge your company needs to succeed in today's Convergence Economy, and to remove the uncertainties of corporate relocation and business expansion.

LOOK INSIDE ILLINOIS.

A GREAT LAKE OF TALENT

Illinois enjoys both depth and breadth in highly-trained talent, whether your company needs professional, technical, advanced manufacturing or service support. Moreover, internationally-recognized educational institutions like the University of Chicago, Northwestern University, the Illinois Institute of Technology and the University of Illinois continually replenish our diverse talent base, and provide abundant research opportunities to develop new ideas.

WIRED TO WIN

The National Center for Supercomputing Applications (NCSA) at the University of Illinois owns an international reputation for innovative applications in high-performance computing, visualization and grid technologies. The Center actively collaborates with global companies to explore new technologies to give a competitive edge in the global economy. NCSA is a partner in the TeraGrid project, pursuing collaborative scientific research and high-level problem solving.

FINANCIAL FINESSE

Since money is the lifeblood of business, Illinois can assist your business in getting the supply it needs. Bank One is just one of Illinois' premier lenders in commercial and industrial loans, serving a wide variety of clients' capital needs to help companies grow. Just this past year, Bank One loaned more than \$55.7 billion to growing firms to become the nation's second largest commercial and industrial lender.

LIGHT. YEARS AHEAD

Illuminating science for decades, the Argonne National Laboratory is a research facility without peer. The Advanced Photon Source (APS), for example, generates the country's most brilliant x-ray beams which permit the examination of materials in greater detail, in shorter times and with smaller sample sizes. This innovative federal laboratory is open to researchers from industry, universities, and other laboratories across the nation in many scientific fields.

WHATEVER IT TAKES

From financing to tax credits, Illinois has a wide array of resources to assist businesses. The Large Business Development Program offers incentive financing for corporate relocation, job expansion or retention. The Economic Development for a Growing Economy (EDGE) program provides tax credits to qualifying businesses that create or retain jobs, and make capital investments at certain levels in the state. Illinois offers a broad spectrum of Technology Challenge Grants to help businesses develop, transfer or commercialize new technologies. We also have job training and workforce assistance programs to retrain employees and upgrade skills.

A NATURAL BALANCE

Illinois provides the rare combination of an excellent place to work and a great place to live. The people are hardworking, open and welcoming. The cost-of-living is affordable. It's a unique place where great natural beauty, cultural urban vitality, sophisticated infrastructure and distribution channels exist side-by-side.

IT'S TIME TO MAKE YOUR MOVE.

You demand innovation and responsiveness from your business partners. Now you can expect the same from our state. Call

Illinois today at **877.221.4403** to get moving.

Or e-mail us at **business@illinoisconverge.com**

Illinois. All Together Now.

Dear Friend,

Illinois is at the forefront of technology and innovation. Leaders in business and finance, science and technology, healthcare and life sciences, advanced manufacturing, transportation, and high-level research and development have a long track record of working together here to ensure our great state continues to be competitive in world markets.

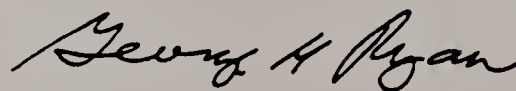
The most recent addition to our corporate community, The Boeing Company, embodies the spirit of the Illinois economy. Illinois, like Boeing, is constantly looking to support the development of new innovations that will improve our ability to do business and enhance our quality of life.

Across all industries in Illinois, people of vision, determination, persistence and deep commitment continue to push the envelope of discovery to further exciting advancements in technology. Their innovative ideas have led to the invention of high-speed global communications, created new business enterprises and led to discoveries that enable people from all over the world to lead healthier, longer lives.

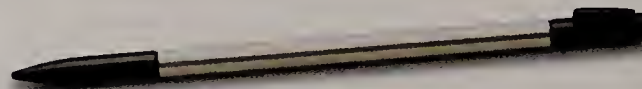
We are proud of these visionaries who call Illinois home. Their presence continues to make this state one of the most desirable corporate climates in America. I encourage you to learn more about what Illinois can offer your business as you position your company to be more competitive in the global economy.

I invite you to join us in the world's premier location for commerce. Here in Illinois, we can offer you deep roots in technological innovation, cooperative opportunities with world-class companies and access to the finest universities and research and development facilities.

Respectfully,



George H. Ryan
Governor



George H. Ryan, Governor
Pam McDonough, Director
877.221.4403

www.illinoisconverge.com

The **CIO** Best Practice Exchange

An **EXCLUSIVE** online
knowledge exchange
for CIOs

“The Best Practice Exchange
is a great idea. Thanks for
taking the initiative.

Sid Banwart, CIO and Vice President,
Systems & Processes Division, Caterpillar Inc.

“I must admit, *CIO* is my favorite
magazine. Now you add
even more benefit with this
Best Practice Exchange.

Linda Brigrance, CIO, Asia Pacific Region, FedEx

“I think the Exchange
is brilliant, and I plan
to visit often.

Larry Krieb, VP of IS,
The Estee Lauder Companies

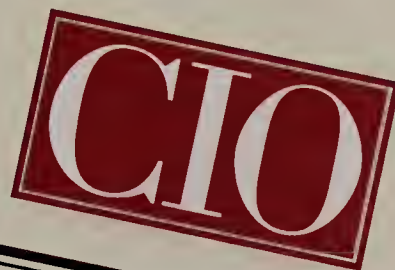
If you are a CIO at a **large organization** and are
interested in learning more about joining the Exchange,
please contact **Martha Heller** at mheller@cio.com.

*You are invited
to join*

The CIO Best Practice Exchange

*a select group of IT executives who
meet online to
exchange information and ideas,
moderated by CIO editors,
ongoing, so that members can
check in and out at their convenience,
a free service that takes place
in a secure environment,
limited to senior IT executives
from today's most competitive,
large-sized companies.*

Will you join us?



COMPANY PROFILE

HEADQUARTERS
St. Louis

CORE BUSINESS
Local car rentals

FINANCIALS
\$6.3 billion in sales for
FY2001

EMPLOYEES
50,000

URL
www.enterprise.com

WHY THEY WON

Enterprise Rent-A-Car's decision to enable insurance companies to book, extend and pay for replacement rentals online has helped it gain command over the market for auto rental replacements. The company has streamlined a once-cumbersome process, making it cheaper and easier for its insurance customers to serve their policyholders, and driving more of their business to Enterprise.

Winner | ENTERPRISE RENT-A-CAR

HOW TO STAY AHEAD OF THE CURVE

A rental car agency's automated system has streamlined the replacement rental process and cemented the company's standing in the industry

BY ERIC BERKMAN

Enterprise Rent-A-Car promises in its TV commercials, "We'll pick you up." Lately it's been providing a huge pick-me-up for perhaps its most important customers: insurance companies.

Occupying a unique niche in the rental industry, St. Louis-based Enterprise gets 95 percent of its business through local rentals—a significant chunk of which are replacement rentals paid for by auto insurers while the renter's car is in the repair shop. With its Enterprise Value Award-winning Automated Rental

Photo by
Scott Indermaur



CIO Bill Snyder says the ARMS online site evolved from graphics-heavy and slow-loading to toned-down and faster.

Management System (ARMS), Enterprise has brought the previously labor-intensive replacement rental process online, streamlining operations for insurers and protecting its niche in the process. To illustrate, the company claims that its overall insurance rental segment—which includes many insurance companies that don't use ARMS—has grown 35 percent between 1998 and 2000. But Enterprise says that business with several of its biggest insurance customers—all of which are using ARMS—has grown at two or three times that rate. And insurance companies are thrilled. "We find it very user-friendly—it increases our efficiency by helping us create reservations faster and easier," says Joseph Ashooh, rental coordinator for MetLife Auto & Home. Greg Horn, material damage director for the GMAC Insurance Personal Line, notes that GMAC has increased its business with Enterprise by 40 percent since going on ARMS, because it improves customer service and lowers costs. Those reactions demonstrate why ARMS is a winning system, says John Glaser, vice president and CIO of Partners HealthCare System and a member of the Enterprise Value Awards judging panel. "Clearly Enterprise had a niche that's very solid, and they've taken very intelligent steps to protect and strengthen their position," he says. "They understand enough about their partners to know what IT innovations will provide value to each of them."

A Call to ARMS

ARMS is a simple concept—a Web-based application that enables insurance companies, Enterprise branches and auto-body shops to manage the entire rental cycle electronically. When someone gets in an accident and files a claim, the insurance adjuster can log on to the ARMS website and create a reservation for the client. Meanwhile, through the ARMS Automotive Web application, the auto-body shop can send daily electronic updates on the status of car repairs. If the repair takes longer than expected, the insurance company is automatically notified through ARMS. Once the body shop com-

pletes the repair and the customer returns the rental car, ARMS automatically generates an invoice and sends it to the insurer. Meanwhile, ARMS gives insurers access to a data warehouse where they can slice and dice information about their overall transactions, enabling them to better analyze and manage the rental process on a macro level.

This is a huge improvement over what used to be a cumbersome, paper-laden, manual process. In the past, an adjuster might have had to call an Enterprise branch three or four times before she hooked up with someone who could process a reservation. Now,

ARMS gives insurers access to data so they can manage auto rentals on a macro level.

with ARMS in place, the endless games of phone tag are over. In fact, Enterprise has calculated that an average of 8.5 phone calls are cut from each rental transaction, as well as half a day from a typical rental cycle, saving the insurance industry between \$36 million and \$107 million annually. That means:

- Enterprise personnel are freed up to provide better personal service to the renter (who's typically disoriented and distressed over his accident and loss of car).

- Auto-body shops can concentrate on repairs instead of fielding annoying phone calls concerning the repair status.

- Insurance companies can cut, on average, a half-day out of the rental cycle.

ARMS was born in the early 1990s, when a couple of major insurance customers, including Geico Direct and Safeco, asked for an automated process that would take a lot of the heavy lifting out of insurance rentals. Without ever doing an ROI, CEO and Chairman Andy Taylor decided that if it was important to Enterprise's customers, then it



Bill Tingle, vice president of e-commerce (left), and Vice President of Rental Jim Runnels led the team that launched the ARMS claims website.

PHOTO BY STEPHEN KENNEDY

When BUSINESS COMMUNICATION



is CRITICAL

Critical communications are vital for both day-to-day operations and emergency scenarios. But guaranteeing that people receive and use the communication when they're overwhelmed with data every minute of the day is more challenging than it seems. While companies spend millions

of dollars developing critical business content and making it available via communication vehicles such as Web-based portals, many of them cannot guarantee that the information is delivered to users when they need it, in a form that they can readily comprehend and use. The problem is exacerbated for mobile workers and "disconnected" users. These highly mobile individuals, such as executives, sales personnel, partners and distributors, are typically responsible for generating revenue; unfortunately,

Is access enough?

they have the most difficulty obtaining the information they need.

To address these issues, CIOs must ask themselves: "Is access enough?"

"When people can't obtain or interact with the right information at the right time, they can't make good business decisions," says Sandi Resnikoff, CTO and vice president of infrastructure at National Broadcasting Corp. (NBC), a major TV network whose business depends on communicating breaking news and program changes to more than 200 affiliates across the United States. "That's a serious obsta-

cle for companies that depend on time-sensitive information. In many cases, CIOs deploy information systems that fail to engage users."

Resnikoff has put her finger on one of the most important issues facing today's information technology (IT) professionals: Given the glut of information with which most business users have to contend, critical bits often get lost in the shuffle.

NBC is a prime example. Affiliated TV stations are an integral part of NBC's overall broadcast service. Unfortunately, with its old communication system, there was no guarantee that affiliates actually read and responded to real-time media alerts. The alerts are used for communicating breaking news feeds, programming changes and other essential events. Delayed interaction to this information was leading to lost airtime, lost advertising revenue and programming delays.

The solution was to establish an urgent messaging system with guaranteed delivery capabilities based on proactive technology. The software allows NBC to deliver instantaneous alerts to affiliates and receive confir-

ILLUSTRATION BY DAVID CUTLER



Custom Publishing

Advertising Supplement

mation when affiliate managers interact with the data.

"When a broadcast alert is sent out from NBC headquarters, all 200 affiliate programming managers receive an 'immortal flash'—a small box that pops up on the desktop—and the NBC chime sounds," Resnikoff explains. "As soon as managers click on the window and retrieve the information, we are notified at headquarters. If managers do not respond, the alerts are escalated to their pagers or cell phones until the information is retrieved—and receipt is confirmed."

Corporate Agenda

NBC is not alone. Critical communication has been pushed to the top of many CIO agendas. In many cases, the problem begins with the way online information is managed and exchanged.

Most corporate communication sys-

tems are built around Enterprise Information Portals that are ideal for aggregating information and managing content. But they don't guarantee usage or ensure that important information gets to the people who need it.

"The self-service approach just doesn't cut it for critical information," says Tom Davenport, director of the Accenture Institute for Strategic Change and author of *The Attention Economy, Understanding the New Currency of Business* (Harvard Business School Press, 2001). "The Internet and e-mail have increased by several orders of magnitude the amount of information an individual can easily access," adds Davenport. "Telecommunications bandwidth is not the problem. Human bandwidth is the problem. Solving the attention deficit means finding better ways to organize attention."

According to Eli Barkat, chairman

and CEO of BackWeb Technologies, CIOs often take the heat from other senior executives when critical information doesn't reach its intended recipients—whether it's sales training materials or financial reports. "You put the new price list on the portal, and two months later the CFO comes storming in wanting to know why POs are still arriving with old prices," he says. "You spend millions on a new corporate communications strategy, and the CEO returns from the field wondering why none of the sales reps have a clue about the new strategy. The marketing organization spends six months developing new sales tools, but has no way of knowing if the sales team is actually using them."

The upshot is clear: Despite the best intentions of the people developing portal content, critical information does not always get through. "Opening a shop in the mall doesn't guarantee revenue," continues Barkat. "People have to come to your store. The same goes for portals. Dozens of CIOs have told us the same thing: Unless they can control and maximize the usage of the portal, there is an exposure risk. Information is presented but not used, and ROI vanishes."

The solution is to establish a portal in which information "finds" the appropriate users, whether or not those users are connected to the network. "If a user does not acknowledge receipt of information, this incomplete communication may create other problems," says Gartner Consulting Director J.B. McCrummen. "For example, making an expenditure might violate newly announced budgets or a product update might need to be installed on the next visit of the service engineer, causing additional and unnecessary costs."¹

Companies like Guidant Corp. maximize their content investments by prioritizing, delivering and promoting usage of critical information. Headquartered in Indianapolis, Guidant is a \$3 billion medical technology company that develops and manufactures products to treat cardiovascular disease. In an industry where lives depend on thorough understanding of product information, Guidant needs to make sure that its national network of 1,000 medical device sales representatives can rapidly assimilate information about new products.

"It's an ongoing challenge: How do we get marketing and training material in the hands of our reps in a timely manner so they are equipped to meet with

Emergency Communications

SHOCK WAVES from the Sept. 11 terrorist attacks quickly reverberated around the globe. At NBC headquarters in New York City—only a few miles from the smoldering World Trade Center towers—CTO Sandi Resnikoff was one of thousands to make a hasty departure. Yet program updates and



scheduling changes—the lifeblood for NBC's 200 affiliates—were delivered throughout the day and over the course of the ensuing weeks in response to current events in New York City and Washington D.C. "We could see the World Trade

Center from our building and we had to quickly evacuate the premises," recalls Resnikoff. "Everything was in an uproar, but we used our urgent messaging system to communicate instant scheduling changes that day and to communicate breaking news with all the NBC affiliates."

Since that fateful day, many CIOs have realized the importance of having a fail-safe communication strategy, along with an infrastructure that can guarantee delivery of critical information.

Disaster recovery and business continuity were ranked by Gartner, Inc. as two of the top five issues on the 2001 CIO agenda,² and a recent META Group study found that 56 percent of business continuity execution issues center on communication.³ "CIOs must focus on communication integrity and address gaps in continuity plans that may be affected by disasters," says Eli Barkat, chairman and CEO of BackWeb Technologies. "Stability and security requirements are driving the need for communications in the new age of disaster preparedness."

Clearly, the ante has been raised for CIOs tasked with building communication portals. Unfortunately, most content management tools are designed for managing and organizing broad scale communication, not critical communication. "A proactive portal with escalation and guaranteed delivery capabilities offers important supplementary capabilities," suggests Gene Phifer, an analyst with Gartner, Inc. "It's important to have an emergency delivery channel not just for major catastrophic events, but for smaller ones, like weather-related office closings. CIOs need to ensure they have the necessary infrastructure to convey timely communication."

Companies have spent millions of dollars on the back end of their portals—integrating applications, developing content and streamlining document management activities. Having a proactive portal strategy ensures those investments will pay off when they are needed most.

customers?" asks William McConnell, vice president and CIO at Guidant. "We are a high-tech business, and 65 percent of our revenue comes from products that are less than 12 months old."

Streamlined Communication

Like NBC, Guidant is using BackWeb® Polite® communications technology to streamline the distribution of sales and training materials to its highly mobile sales force. Formerly, this information was sent in paper form, making it difficult to monitor its receipt. Guidant didn't want to leave these critical communications to chance so McConnell's team set up a portal that delivers important information directly to subscribers' laptops whenever they connect to the network. "When reps dial in or use the VPN, an alert appears in the lower part of the screen telling them if new material is available," says McConnell. "If it is time-sensitive—such as an announcement about FDA approval or a bulletin about a product recall—an alert will flash as well."

McConnell says it was relatively easy to set up this infrastructure. Guidant uses BackWeb ProactivePortal Server™ to actively find users and deliver crucial content to them—wherever they are.

couriers like FedEx—the recipient's signature is proof that they received the package. Web portals need to guarantee this 'last mile' of usage."

Many companies entrust critical information to e-mail but individual communications often get lost in the general inbox deluge. "E-mail communication is so common it's difficult to get an urgent communication to stand out," Resnikoff points out. "Periodic, urgent messages with media-rich text can keep people passionate and inspired. So long as it is not overused and the content has obvious value to the recipient, we find people appreciate having windows and alerts appear on their screens."

Gartner Consulting's McCrummen stresses the importance of closed-loop notification in the event of a system crisis, such as when a software virus infects the network and employees must be immediately notified. "Sending information or updates to PCs, laptops or other devices



Eli Barkat, chairman and CEO of BackWeb Technologies

Making E-Business Investments Pay Off

These information delivery dynamics are particularly important for e-business applications. Many companies bought into the value of e-business systems for generating revenue, reducing costs, streamlining production and getting to know customers. Now they are waking up to the realization that implementing the software and training users is not enough. The Internet is a platform for managing business, not just for publishing information. But no company wants to entrust critical business information to a platform that's not guaranteed.

The rise of e-business information is popularizing what Gartner, Inc.'s Gene Phifer calls "Gen 3" portals. According to Phifer, the first generation of portals mainly focused on aggregating content, while the second generation took on the attributes of application frameworks. Third-generation portals include proactive capabilities to allow critical infor-

Portal ROI (return on investment) = Content + Content Usage

BackWeb helps companies maximize their content investments by prioritizing, delivering and promoting the usage of critical information to customers, suppliers, partners and employees across the enterprise.

Users can subscribe to content they want to receive and specify which content will be delivered offline.

Portal Assessment

This strategy is in keeping with advice given by attention experts like Tom Davenport, who say a conscious information strategy should assess what information is truly important to the organization's success and then ensure that it reaches the right people's attention. Barkat agrees. "You must ensure not just that information is available, but that it is received," he stresses, pointing to other types of communication systems as examples of the proactive model. "The telephone may be intrusive, but when you reach someone at least you know they got the information. The same thing applies to

and having a confirmation that the data was received is becoming a critical role for portal technology," he says. "The user needs to know the urgency and have the confidence that a solution is being deployed. It is also critical that the IT department know that a fix was effectively delivered and installed."⁴

For example, when the worm e-mail virus W32/Goner recently hit, BackWeb's IT department used BackWeb's own closed-loop reporting technology to ensure that employees were aware of the virus and to confirm whether or not they had installed an essential anti-virus patch. The BackWeb technology allowed IT pros to quickly assess which employees had activated and installed the necessary software, and to follow up immediately with any stragglers.

mation to reach the appropriate user in the appropriate way. Users can establish preferences for how information is prioritized, request notification of delivery to a mobile device when a user is offline—and even request that the content be made available for offline usage. "Gen 3 portals use message alerts, multichannel delivery, guaranteed interaction, and escalation to ensure critical content is received and acted upon," Phifer says. "Each user's interaction with the content is guaranteed and tracked."

For example, Guidant uses BackWeb technology to monitor how sales reps interact with new product and service bulletins. Information technology managers can generate reports to discover how often sales reps interact with the content, when they last received content and which content they interact with

⁴ "Profitable Enterprise Portals," J.B. McCrummen, Dec., 2001.

About BackWeb

BACKWEB HELPS COMPANIES maximize their content investments by prioritizing, delivering and promoting the usage of critical information to customers, suppliers, partners and employees across the enterprise. BackWeb ProactivePortal™ technologies allow companies to ensure that the right people have

the right information at the right time. These technologies are the result of hundreds of man-years of development effort and experience with hundreds of customers.

Many Fortune 500 companies rely on BackWeb to manage critical communications across the enterprise, maximize their portal investments, and streamline their e-businesses. By ensuring that critical portal content is automatically prioritized, delivered, received and used across the enterprise, CIOs can promote their business-critical communications and leverage their portal investments. For more information, please visit us on the Web at www.backweb.com.



most frequently. "Our reps are constantly in hospitals or moving between hospitals and we want to make sure they have the right material to present to physicians," McConnell says. "Now we can monitor content usage in a closed-loop fashion to ensure that each rep is equipped for the job."

NBC does the same thing with its urgent messaging system. BackWeb technology determines whether or not users have received the content and can send an alert or reroute the information to a secondary device—such as a cell phone or pager—until receipt is confirmed.

Driving Proactive Portals

This type of offline access capability is one of the primary business drivers for Gen 3 portals. According to David Yockelson, an analyst at META Group, offline access to portal content increases the potential for usage and portal payback. "Portals are passive by nature," says Yockelson. "Despite

their ability to present contextually relevant information, they cannot deliver it 'piece-meal' to the desktop. This will become a bigger issue as more critical data is aggregated. BackWeb's proactive delivery understands information criticality and can add ROI to portal deployments."⁵

In many cases, the value of information is linked to the freshness of that information. For example, the difference between getting to a sales lead or service alert in five minutes or five hours could mean the difference between winning and losing a customer. Mobile computing is not just about pulling information. It's about delivering information as well—especially when that information is carefully targeted to particular people in particular situations. "As alternative communication channels proliferate, we need software that can escalate information delivery and notify users even when they are disconnected from the network," says Davenport.

Barkat believes 50 percent of portal ROI is based on disconnected users. "The people who drive revenue are typically the ones who spend the most time out of the office," he reasons. "Executives, field sales personnel, partners, distributors—these are the customer-facing people, and also the ones who are often on the road. You can't expect them to return to the office to gather information, yet that's where the information typically resides. There is a huge disconnect here."

Surmounting Technical Hurdles

Making sure each of these users has the necessary information is important—but not at the expense of overloading the network. McConnell advises that CIOs be selective about the information they decide to send through proactive channels, and to make sure they have the right software for the job. For example, the BackWeb Polite communications technology allows Guidant to send information only when network bandwidth is available, so users can receive content in the background and

without creating performance interruptions to other network applications. "Multimedia Flash Alerts automatically appear on the user's screen to alert

sales representatives to the arrival of new content without interfering with current applications in use on the desktop," McConnell says.

The infrastructure should enable efficient delivery of massive amounts of content and be able to manage large events in a network-sensitive fashion. "What's required is massively scalable content delivery with accurate portal synchronization, offline access and inherent data management," Barkat says. "When it comes to portal ROI, these are

the three key technical challenges that CIOs need to solve."

Ensuring a Return on Portal Investments

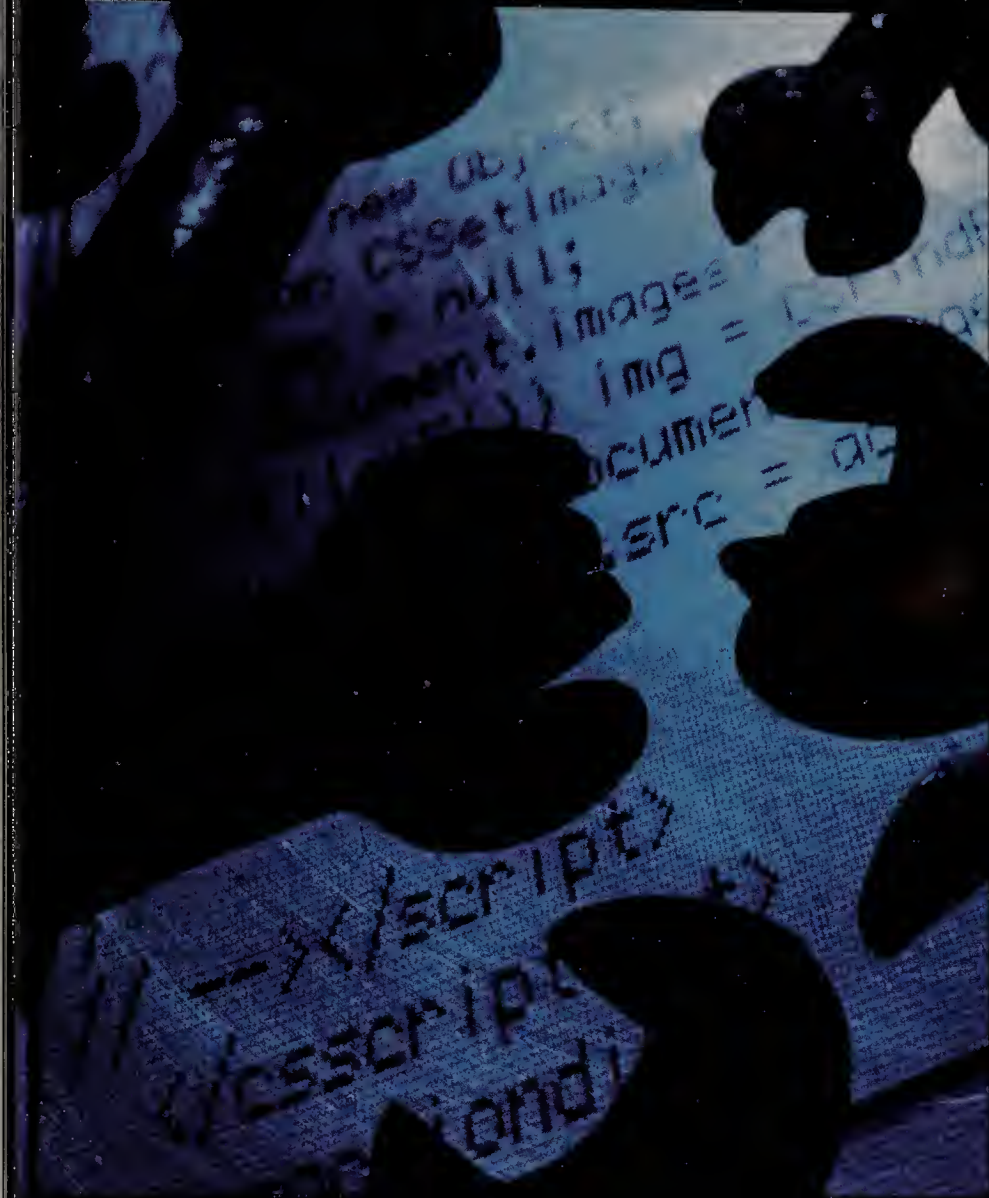
Analysts at Cahners In-Stat Group report that businesses are focusing their IT spending on improving communications and networks as they shift resources away from more ambitious endeavors such as online marketplaces and e-commerce systems. Making it easier to access crucial information—anytime, anywhere—ensures that important decisions aren't delayed. This has a direct impact on costs and, ultimately, profits.

Resnikoff puts it in practical terms. "The job of the CIO is connecting people with information," she says. "We partner tightly with the business to develop technology to solve their problems. We won't undertake a new technology project unless it has a very good ROI. In this instance, we're saving about \$300,000 per year, which adds up to a two-year payback for the proactive portal technology investment."

McConnell concurs. "We have overwhelming support for the value that this technology is providing," he concludes. "Ninety percent of the reps are using it, and they are getting the information they need. In our case, the ROI is more anecdotal than measurable, but the feedback we're getting is that the technology is improving productivity and helping the reps do their jobs." ●



William McConnell, vice president and CIO at Guidant Corp.



THE TOOLS THAT BUILD YOUR BUSINESS.

As new business demands continually shape your company's technology goals, find the products and services you need to succeed.

On the CIO BuyersandSellers Network, you'll find thousands of hardware, software, and IT service providers listed in our easy to use directory. Browse up-to-date company listings and build a short list of vendors who can deliver the best solutions. Our RFP tool allows you to anonymously post your project needs free of charge. You'll receive competitive proposals from vendors, and be able to contact and negotiate with them online. Put our service to work and watch both your technology and your business develop!



BuyersandSellers Network

<http://cio.newmediary.com>

Consulting | IT Services | Network Services | Security | Software | Storage | Telephony | Web Development | And more

THE WINNING SYSTEM

COST: \$28 million in hardware, software and staff time; \$7.5 million in annual maintenance

HARDWARE: ARMS Claims uses Sun Enterprise Servers as its Web and application servers. Those, in turn, connect to IBM's AS/400 operational systems.

SOFTWARE: On the Web servers, ARMS uses Apache software to put up the webpages. On the application servers, it uses BEA WebLogic Server software to perform business logic and dynamically build HTML.

NETWORK: Enterprise uses TCP/IP as the protocol running over its Ethernet network.

VALUE STRATEGY

Traditionalists beware: CIO Bill Snyder says that Enterprise does not use any standard value assessment tools such as the Balanced Scorecard, project portfolio management or economic value added. Instead Enterprise relies on a computer review committee consisting of Snyder, CEO Andy Taylor, COO Don Ross, CFO John O'Connell and several other executives. The committee members evaluate and prioritize major IT projects based on their gut feeling of what the customer impact will be. Customer-focused IT projects do not go through an ROI analysis, but internal IT projects, like ERP implementations and infrastructure upgrades, do. "Fundamentally, IT doesn't care what it's working on, though we like to work on those things that have the highest return for the business," says Snyder. "The [steering committee] prioritizes things."

was important to Enterprise in order to maintain its dominance in the market. So the company went about building the first iteration of ARMS, a system called ARMS Direct, which was a proprietary link between the insurer's claims system and Enterprise's rental system that enabled adjusters to send rental data directly from their own system to Enterprise. However, some insurance companies—particularly the smaller ones—didn't want to do the programming it took to integrate the two systems. So in 1996, Enterprise introduced ARMS 400, an AS/400 host-based application that allowed the adjuster to dial into ARMS and type rental information directly into the rental system, which was more palatable to smaller insurance companies because it didn't touch their own claims system. Finally, in 1999, a team led by Vice President of E-Commerce Bill Tingle and Vice President of Rental Jim Runnels, a business sponsor, introduced ARMS Claims, a Web-based system that allowed the adjuster to manage the entire rental process over the Internet. But that was a challenge. According to Enterprise CIO and Senior Vice President Bill Snyder, the existing systems, with their direct connections between Enterprise and its insurance company customers, had rock-solid 99.9 percent uptime without errors or dropped transactions. Enterprise was therefore concerned about the network control it was losing by transitioning to the Internet, where connection speed isn't as reliable. With a business application, customers expect 24/7

high-speed availability, and they weren't receiving it. "When you get onto a [consumer site like] Amazon.com, there's a level of expectation that traffic might be slow depending on when you go on during the day," says Snyder. "But with our insurance customers, they weren't going to be tolerant of [that]." Tingle's team addressed that challenge by toning down the site's appearance, removing many of the graphics. Customers had liked the snazzy look at first, but the graphics tended to slow transactions anywhere from eight to 10 seconds to a trickle, depending on the time of day and traffic. "After [ARMS] became their daily workhorse, they said, 'You know what? I don't need the pretty horse,'" Tingle says.

Business Rewards

Another challenge was the ARMS Automotive system, introduced in April 1999 for auto-body shop users. The payoff for it was obvious. Instead of busy mechanics constantly having to field phone calls, they could simply send a mass update of all Enterprise customer repairs in their shop once a day at their convenience. The problem was that most auto-body shop PCs were still

running on DOS, and Internet access was nowhere on their radar screens. Fortunately, insurance companies began demanding that shops migrate to Windows-based repair-estimating software, which forced most of the shops to upgrade their systems and become Web-enabled in the process. That then allowed Enterprise to develop a single, Web-based version of ARMS Automotive.

In the end, Enterprise has reaped considerable rewards from ARMS. The company processes more than \$1 billion worth of transactions annually through the system. And according to COO and President Don Ross, Enterprise has been able—in large part because of ARMS—to forge several "preferred provider relationships" with insurers like MetLife and GMAC. Meanwhile, 22 of the nation's 25 biggest insurance companies—and more than 150 companies in all—are using the system. And because ARMS makes it so much easier for insurance companies to do business with Enterprise, the company's business with major ARMS customers has grown dramatically faster than its overall insurance business, which includes insurers still conducting rental transactions manually. "We've seen our business more than double with certain companies since they've gone on ARMS," says Ross. "It's really the glue that put it all together." 

CIO.com

For more on e-commerce, see our **E-BUSINESS RESEARCH CENTER** at www.cio.com/ec.

Have you grown your business by automating your processes? Let Senior Writer Eric Berkman know at eberkman@cio.com.

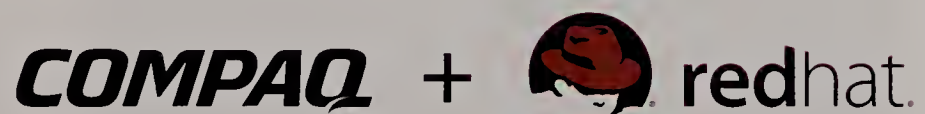
Spending too much on your RISC/UNIX infrastructure?

> Migrate to **LINUX**

Red Hat® Linux® on Compaq ProLiant™ Servers

Saving money creates competitive advantage. And you'll save BIG in Total Cost of Ownership when you migrate to Linux.* Combine Compaq ProLiant servers, the world's best-selling server, and Red Hat Linux, the world's leading Linux platform. You'll have higher performance, lower TCO, and 24/7 support that's there when it counts.

* **Get the numbers.** Read the IDC whitepaper on Total Cost of Ownership.
Go to www.redhat.com/explore/tco7



© 2002 Red Hat, Inc. All rights reserved. "Red Hat," Red Hat Linux, the Red Hat "Shadow Man" logo, and the products listed are trademarks or registered trademarks of Red Hat, Inc. in the US and other countries. COMPAQ, the Compaq logo and ProLiant are registered in the U.S. Patent and Trademark Office. Linux is a registered trademark of Linus Torvalds. All other trademarks are the property of their respective owners. The IDC research included standard Intel architecture servers from a number of vendors.

1-866-2REDHAT #8

COMPANY PROFILE

HEADQUARTERS
Lansing, Mich.

CORE BUSINESS
Construction

BUSINESS UNIT
Construction and
Technology Division

FINANCIALS
\$1.5 billion annual road
and bridge construction
budget

EMPLOYEES
3,000

URL
www.mdot.state.mi.us

WHY THEY WON

The Michigan Department of Transportation's FieldManager system for managing road and bridge construction projects gives taxpayers more value for their money by reducing administrative overhead. The system, deployed in May 1999, has helped the department cope with a budget for construction projects that has tripled from \$500 million a year to \$1.5 billion a year since 1993, while cutting its staff from 5,000 to 3,000. Road projects are completed more quickly too.

Winner | MICHIGAN DEPARTMENT OF TRANSPORTATION

PAVING OVER PAPERWORK

By automating its collection of inspection data, Michigan cuts the cost of building roads and bridges

BY STEPHANIE OVERBY

Construction technician Bill Young remembers when he had to load his truck each day with paper forms before he drove around central Michigan inspecting road construction sites for the Michigan Department of Transportation (MDOT). He had so many boxes "there was no room to even move," recalls Young, sporting a plaid flannel shirt and the deep tan he's acquired working in the field for the past 12 years. Today, the only evidence of paperwork in his truck is a notebook computer mounted on the dash. "Now I'm like a one-man band," Young says. "It's just my laptop and me."

Young is one of hundreds of technicians and inspec-

Photography by
David Baditoi



MDOT CIO C. Douglass Couto (left) and Gary Taylor, chief engineer of the Bureau of Highway Technical Services, formed an unusual financial partnership with their vendor, Info Tech.

tors from 37 MDOT offices, 120 local transportation agencies and 71 private companies in Michigan using FieldManager, a suite of road construction management software developed and co-owned by MDOT and Info Tech, a Gainesville, Fla.-based software company. It's a groundbreaking system for a government agency and an industry that has changed little since 1909, when MDOT laid the first mile of concrete highway in the country.

Since the agency launched FieldManager in 1999, the system has enabled MDOT to eliminate a time-consuming, error-prone manual process for managing construction projects so that Michigan taxpayers get more, such as better roads and bridges, more quickly, for their money. FieldManager has also helped MDOT cope with an increase in its budget from \$500 million to \$1.5 billion a year since 1993, while cutting its staff from 5,000 to 3,000. An example of FieldManager's impact: The M-6, a new 20-mile "beltline" being constructed south of Grand Rapids, in western Michigan, will be completed three years early, in 2005.

FieldManager eliminated an error-prone manual process for managing projects.

"FieldManager is consistent with my goal of putting more of our state's transportation dollars into preserving our roads and less into administrative overhead," says MDOT Director Greg Rosine. Now others are following MDOT's lead. FieldManager has been licensed by seven states, two Indian tribes and 223 private companies. "I see MDOT as a leader within its industry," says Doug Barker, CIO and vice president of The Nature Conservancy and one of four judges who honored MDOT with a 2002 Enterprise Value Award.

In the past, a field technician used to go to every work site with a printout of his required Inspector's Daily Report. He would fill it out by hand, tracking thousands of work items and materials for each project—

everything from earth excavators to grout. At the end of the day he would hand the report in to the office. Assuming the handwriting was legible, the information on materials used, work completed and payments required would be copied and hand-tallied by as many as five people before the contractor got paid. MDOT needed an army of office workers to verify contractors' work, and inspectors often could handle only one project per season. Larger projects required as many as 20 inspectors onsite each day. Today, MDOT rarely sends more than one field technician to a site. He enters data into a laptop and uploads it to FieldManager, either from the road or back at the office. Office technicians use the information to automatically generate payment



Kevin Fox, systems administrator for FieldManager, won over skeptical inspectors.

estimates. Meanwhile, inspectors and office workers can get up-to-date reports on their projects to settle contractor disputes, amend contracts, check the status of budgets and make other routine administrative queries.

A 10-Year Project

FieldManager's origins go back to 1989, when Kevin Fox, now the systems administrator for FieldManager, developed a DOS-based construction management program called the Construction Project Record Keeping System (CPRKS—pronounced *ka-perks*). CPRKS eliminated some transcribing, but it was integrated with an aging mainframe and wasn't integrated with the other major construction management system MDOT used.

The effort to make CPRKS Y2K compliant gave CIO C. Douglass Couto the opportunity to make improvements. "If we were going to spend that kind of money anyway, [we would] see what other changes we could

Workforce Productivity

Before

After

Web-based labor management solutions for the entire workforce — configurable, scalable, real-time.
Discover how you can improve your productivity at www.kronos.com/offer/solutions, or call 1-800-225-1561, ext. 8103.



KRONOS®

Improving the
Performance of
People and Business™

COST: \$5.1 million for development, two-thirds paid by MDOT and one-third by other customers and vendor Info Tech; \$767,000 in annual maintenance costs

HARDWARE: Intel servers; Intel-based Dell desktop systems running Microsoft Windows NT 4.0 or Windows 2000; Intel-based Dell notebook systems running Windows 95, Windows NT 4.0 or Windows 2000

SOFTWARE: Sybase SQL Anywhere database software; custom applications built using Sybase PowerBuilder; Info Tech GUI Object Model; Microsoft Developer Studio 97 software development tools

NETWORK: LANs with interoffice access via WAN, both running Novell Network 4.2; dial-up access for field workers

Michigan Department of Transportation CIO C. Douglass Couto uses a value methodology based on the Balanced Scorecard. Couto has adjusted this model to account for benefits that are hard to quantify financially but that are important to government agencies, such as reductions in clerical errors, an improved department image, legal compliance and better employee morale. "Some people have told me I can put a dollar value on everything, but I haven't found the model yet that does that," Couto says. The methodology helps Couto set priorities for his investments and ensures that high-value projects stay on track. "Once a project is approved, a project manager knows he's got management support and funding," he says.

make," Couto says. He hired Info Tech, which had created a PC-based system called Field Book that Couto and Fox thought could be upgraded to replace CPRKS. "We had the foundation, but they brought a million dollars' worth of software to the table," says Gary Taylor, chief engineer of the Bureau of Highway Technical Services.

Roadblocks

A financial partnership between a state government department and a software company was unprecedented. Contract negotiations between the Michigan attorney general's office and Info Tech's lawyers dragged on for nearly two years as they searched for a politically acceptable solution. "We had to focus on MDOT's business, which is building roads, not marketing and distributing software to local agencies and consultants," explains Couto.

MDOT and Info Tech stuck through the negotiations because they saw the value of FieldManager to others in the construction business, says Couto. The final agreement allowed MDOT and Info Tech to co-own the source code. Info Tech got the right to sell the software but had to dedicate licensing fees paid by other states for the further development of FieldManager. The contract also granted Michigan's state and local transportation agencies a perpetual license to the software, mandated that MDOT

approve any future changes to it and paid MDOT royalties from sales to private users. It was a far cry from the standard contract that gave the vendor all control over the software and all the financial benefit from its sales. "If we had done it the usual way, we would have had to pay to make any changes," says Couto.

Fox and Couto also had to convince MDOT's legions of end users to embrace FieldManager. "One person took the laptop and said, 'The only thing I'm going to do with this is put it behind my truck and back over it,'" recalls Fox. MDOT overcame the opposition by including users at every stage of development and letting FieldManager sell itself. "We told them to take the software for three months and let us know what they thought about it," says Fox. "I never had anyone come back and tell me they wanted to go back to the old way." Today, some of the early resisters are FieldManager evangelists. "If you went to some of those people who had been the most reluctant and tried to take the software away from them now, you'd get hurt," says Daniel Rutenberg, sen-

ior systems analyst for the construction and technology division.

Building New Roads to Value

MDOT continues to involve users in FieldManager's development, from inviting groups of eight people to test new features to yearly conferences of 50 users to suggest future changes. "You know the things that you say are going to count," says Sandra Aldrich, records technician for the Road Commission of Macomb County in suburban Detroit, who's worked on MDOT projects for nearly 20 years.

It's been so helpful to private consultants that contract with local government offices to oversee MDOT projects that they use it for their non-MDOT work as well. "My background is civil engineering. It's not bookkeeping," says Stuart Laasko, an engineering specialist for Grand Rapids, Mich.-based engineering company Fishbeck, Thompson, Carr & Huber, who pays \$15,000 a year for a FieldManager license. "I no longer spend my time adding numbers from report to report." The software has more than paid for itself by enabling him to work on more than one project at once. "The amount of work you can push through with this is amazing," Laasko says. **CIO**

You can reach Senior Writer Stephanie Overby at soverby@cio.com.

CIO.com

TALK BACK: Should an IT department try to sell its own solution to other enterprises? Tell us what you think at www.cio.com.

ENTERPRISE SELF-SERVICE:

A Business Model *for a*

CONNECTED

"Companies looking to transform themselves into e-enterprises or to extend their existing e-business initiatives need a new business model—a new model that fundamentally changes how companies view their relationships with their customers, partners and employees," says Chris Grejtak, EVP and Chief Marketing Officer of BroadVision Inc., Redwood City, CA. "These enterprises need to adopt an 'outside-in' perspective as opposed to the traditional, 'inside-out' viewpoint."

"Known as Enterprise Self-Service (ESS), this new business model allows your major stakeholders to interact with your enterprise in a personalized, collaborative way using the power of the Web," Grejtak says. "ESS means changing all of your relationships—interactions, transactions and services—from a manual, human-assisted paradigm to a personalized, self-service model. The result is immediate business value in the form of reduced costs, enhanced growth, improved productivity and long-term customer satisfaction and retention."

Sponsored by:

BROADVISION®



Custom Publishing

Advertising Supplement



SOURCE: GARY HENRIE

help desks, hot lines and other internal systems continue to be capital- and human resource-intensive. These support staff and service people devote between 70 and 80 percent of their time to interactions with employees, partners and customers.

"But the biggest problem is that the traditional model imposes a strict way of doing business with customers, partners and employees that is costly to maintain," says Grejtak. "BroadVision is working with companies that have realized significant business value by moving up to 60 percent of their core business processes to an

Enterprise Self-Service model. They are realizing significant cost reductions and dramatic increases in the quality of the interaction between the enterprise and its key constituents."

Leading the Way

Although Enterprise Self-Service is a new and different business model, it already has a proven track record.

BroadVision customer British Telecom (BT), concerned about call

Grejtak points out that most enterprises today run their business operations using various legacy back-office, financial and human resource applications. Data warehouses and other intelligence and analytic tools also come into play. Associated with these systems is a set of business processes that require expensive, human-assisted services and interactions. CRM and other applications may provide automated support, but call centers,

center costs, is converting key business processes to a self-service model. Significant cost reductions and increased revenues have been the result. For example, BT's "Friends & Family" program costs on average \$4.73 per request in the call center and just four cents on the Web. The BroadVision-powered BT.com website generates 100,000 new customer registrations each month and serves more than two million page requests per day. The website now generates more than \$142 million per year in direct revenue by providing advanced personalization and self-service capabilities.

From Promise to Reality

The self-service model is making Web-based cost savings and new revenue streams a reality. Grejtak points to a recent in-depth research study of e-business initiatives, conducted by BroadVision and Surgency, a well-known consulting and research firm. The research involved hundreds of enterprise clients and interviews with an equal number of industry leaders.

The results of this research are summarized in a report that details nine transformational strategies that com-

ucts and services. The software must also facilitate close relationships with application service providers (ASPs), as well as access to exchanges and cross-selling. Reports on customer and end user feedback contribute to improvements in future solutions packages.

At Answer Financial, Inc. (www.answerfinancial.com), an online insurance agency with an integrated call center, BroadVision solutions are used to provide customers with Web-based services that allow them to research and compare various types of insurance policies from some 175 top-rated national providers. By dispensing unbiased information and providing decision tools on policies ranging from life, auto, homeowner and health to pet insurance and home warranties, Answer Financial acts as a one-stop solution for consumers, enabling them to compare hundreds of plans using one site.

Customer Self-Service—This strategy reduces service costs, such as running call centers, by making information immediately available to customers on a 24/7 basis. Customers are empowered to address their issues

tomers extensive, interactive trip-planning capabilities that provide comprehensive information and assistance—from driving directions and road construction updates to hotel and dining reservations. An online road trip guide allows visitors to create and print out their entire road trip by selecting start and end points. The system generates online maps and turn-by-turn driving directions. In addition, visitors can use the website to make reservations through a booking partner called Places to Stay. The website generates substantial sales of Rand McNally atlases, maps and software, as well as revenues from an online shop that carries approximately 4,500 travel-related items.

Customer Lifecycle Management—Designed to cultivate customer relationships from pre- to post-sale and beyond, this strategy allows businesses to anticipate and deliver the products customers want, when and how they are wanted. Supporting systems help personalize customer interactions, identify behavior patterns, support mass customization and enable continuous product innovation. Effective customer lifecycle management builds customer loyalty at every stage in the lifecycle by offering customers personalized, Web-based care through multiple channels and by helping the business target customers with relevant value-added services.

GE Supply, a \$2 billion distributor of electrical, voice and data products, has leveraged its BroadVision self-service site (www.gesupply.com) to significantly increase online revenues and its online customer base. Lifecycle management allows customers to review extensive information and make purchases online. The site automatically provides content relevant to individual users' interests, including featured products, industry-specific information, customer-specific pricing with online quotes, and time-saving ordering tools such as purchasing lists, quick-buy functions and an individualized catalog that remembers previous purchases.



BT's "Friends & Family" program costs on average \$4.73 per request in the call center and just four cents on the Web.

panies have used as they move to an Enterprise Self-Service business model.

These nine transformational strategies include:

Total Solution Provision—This initiative bundles products and services together into a targeted solution, freeing customers from having to integrate separate purchases on their own. The strategy focuses on helping a business coordinate with multiple suppliers and partners. Customer satisfaction is increased because they receive a complete solution from a single touchpoint.

Software enabling this strategy should make it easy to obtain information or access aftermarket prod-

whenever they want. And the business is able to scale services more smoothly than would be possible when customer service is provided solely by call center staff.

Customer self-service requires a system that gives customers online access to and interaction with all their current account information. Applications should enable them to quickly search for additional information and configure a customized solution. These interactive systems also enable self-directed purchasing and exchanges.

For example, Rand McNally's BroadVision-powered site (www.randmcnally.com) offers its cus-

One-to-One Customer Interaction—

By seamlessly sharing information throughout the corporate infrastructure, the enterprise presents a single face to its customers no matter how the interaction takes place or what part of the company is involved. This strategy is particularly relevant for businesses whose products are seen as commodities, which makes service differentiation, branding and trust building critical. It allows the business to learn more about its customers and refine its offerings, building even greater brand loyalty.

This strategy requires software that enables the seamless sharing of information throughout the enterprise. Also required are applications that support continuous learning about customer needs and preferences in order for the business to adapt its product and services offerings.

Circuit City is well known for its high level of customer service, low prices and broad selection of brand-name consumer electronics. The company's "e-Superstore", www.circuit-city.com, is completely integrated with their physical store's back-end systems for order fulfillment and inventory. The BroadVision-powered site allows Circuit City to replicate the customer experience at its Superstores while leveraging the advantages of 24-hour Internet access. In addition to being able to browse, purchase and arrange for home delivery of products, consumers can select and check the inventory of up to three "express pickup" locations, where customers can take delivery of their orders after purchasing online. Because Circuit City's in-store prices are adjusted to compete with local retailers, the e-Superstore automatically adjusts the price to reflect in-store specials at the location chosen by the customer for the express pickup.

Demand-Driven Forecasting and Replenishment—This strategy correlates real-time information on customer behavior and consumption patterns with sales and supply data. Real-time information on supply and demand helps companies reduce

inventory carrying costs. Customers benefit because consumption immediately triggers replenishment, eliminating waiting for purchases.

Achieving demand-driven forecasting and replenishment requires a system that facilitates demand planning, collabora-

Rand McNally's BroadVision-powered site offers its customers extensive, interactive trip-planning capabilities that provide comprehensive information.



tive planning, forecasting and replenishment (CPFR), and make/configure to order features.

RS Components, a major U.K. distributor of electronic and industrial supplies, uses BroadVision One-To-One® profiling and observation techniques to add a personal touch to its interaction with 150,000 customers who evaluate and order more than 100,000 products online at www.rswwww.com. Repeat customers are presented with information on special offers that relate specifically to their areas of interest, further driving demand.

Innovation and Collaborative Design—This initiative assimilates partner capabilities and shares customer and product knowledge throughout the extended enterprise during the entire product lifecycle. Particularly suited for emerging marketplaces and R&D intensive industries, this strategy enhances communication among all team members and customers in order to improve product development. As a result, more innovative product designs are created, time-to-market is cut, and sales and profits increase.

Support for this strategy is provided by software that blends concurrent engineering with real-time, online communication. Chat functionality and the ability to share images online are essential. Capturing customer and partner feedback on a regular basis is also a requirement.

One of Taiwan's largest semiconductor foundries uses BroadVision solutions to collaborate with semicon-

ductor partners on product design, engineering, logistics and manufacturing. The site has the requisite scalability to support the manufacturer's rapid growth. The company's website features a "Virtual Fab" window into the foundry's manufacturing environment

so customers can follow their wafers through the manufacturing process. Customers and partners use the website to conduct engineering collaboration, order products, track production data, and access customer service. An Internet conference forum enables direct interaction among engineers for sharing charts, screenshots and individual die images. The highly interactive website allows the foundry to deliver information in real-time, promotes collaboration, and enables the manufacturing of high-quality, leading-edge integrated circuits.

Supplier and Partner Self-Service—Improving supplier and partner access to the enterprise's information and transaction systems is the purpose of this strategy. Because businesses are able to communicate more efficiently with the members of their extended enterprise, they can execute their inter-enterprise plans more cost-effectively, streamline common activities and promote informed, coordinated decision-making.

Supporting systems for this strategy must provide collaborative planning, forecasting and replenishment, direct procurement, exchange applications, standardization and outsourcing features.

Aviall, a distributor for 90,000 aviation-related line items, has created a BroadVision-based website (www.aviall.com) that enables its suppliers to view sales and inventory information in real time, enhancing their product and inventory planning, supply chain management and forecasting. The site feeds outstand-

ing quotes and orders data directly into supplier ERP or MRP systems, assisting them with supply chain management, production and inventory planning and forecasting. In the process, Aviall has forged tighter bonds with its suppliers, boosting the company's competitive advantage.

Employee Self-Service—Enabling employees to take care of routine business using Web-based applications allows them to focus on higher value-added activities. This strategy allows employees to access information and carry out routine transactions related to their employment—a far more productive, efficient and satisfying process than the more traditional, lengthy trips through a bureaucratic paper trail.

Systems supporting employee self-service provide access to information and transactions related to benefits, career training, time and labor reporting, e-learning, travel and expenses.

At Anderson Trucking Service, a BroadVision-powered website (www.ats-inc.com) is helping to grow its business and attract and retain good drivers. The busiest page on the site provides drivers with real-time information on which loads need hauling, a real plus for contract drivers. Drivers who are full-time Anderson employees use the site to update the system on their progress and start the settlement process while on the road, rather than waiting to submit paperwork after the trip is completed. This speeds up their payments substantially.

Community Empowerment—Businesses implement this strategy when they wish to establish and nurture a network of relationships between the business and its customers. This solution creates a website where people with similar concerns can share information.

Systems for this strategy should facilitate content creation and community branding as well as mechanisms for community profiling to ensure relevance. The website should be inviting and easy-to-use.

Using BroadVision software, The Home Depot (www.homedepot.com) offers the expertise of its store associ-

ates over the Web. Customers have access to more than 100 “how-to” projects. One click presents all the information needed to complete a project, including expert tips, skills and time required, plus a listing of tools and materials needed—all available, of course, at The Home Depot. The site's dynamic profiling drives relevant content to visitors using the service, which was built to support 20 million daily visits and 40,000 concurrent users.

Mapping Your Strategy

How do your strategies map to these nine transformational strategies and how can they impact your organization? Where do you start?

The first step is to email us now at svpmail@broadvision.com or visit <http://www.broadvision.com/transform> to qualify for a FREE, 30 minute Self-Service Opportunity Assessment (SSOA) resulting in your own personalized report as a take-away.

The SSOA is an online tool that gives you a quick and easy way to better understand your organization's readiness to take advantage of Enterprise Self-Service technologies. By completing the SSOA, you can benchmark your e-business maturity versus “best in class” organizations and better understand how to maximize the benefits of your e-business initiatives.

Email us now at svpmail@broadvision.com for your FREE assessment or visit <http://www.broadvision.com/transform> for more information.

BroadVision Solutions

BroadVision solutions make these strategies possible. BroadVision One-To-One Enterprise and Content Management solutions, along with BroadVision InfoExchange Portal™, BroadVision Business Commerce™ and BroadVision Retail Commerce™ applications offer you a unified e-business solution for Enterprise Self-Service initiatives. In addition, BroadVision's Solution Value Proposition program offers a Web front-end tool for self-service opportunity assessment; workshops to develop the strategies for ESS solutions; and a methodology to determine the ROI of any e-business initiative.

BroadVision also provides a full spectrum of global services and support to ensure customer success. Included is consulting, training and partner support that involves working closely with platform vendors and application service providers.

“We provide the products and services that allow enterprises to evolve from the old, inward-looking ways of doing business to the new, outside-in paradigm,” Grejtak says. “Enterprise Self-Service is a fundamental transformation that will change the way business is conducted for decades to come.” •

For more information about BroadVision, Inc., call 1-866-287-6669, email svpmail@broadvision.com or visit www.broadvision.com/transform.

Visit www.broadvision.com/transform to qualify for your free self-service assessment or email svpmail@broadvision.com.

About BroadVision

BroadVision's Enterprise Self-Service applications create immediate business value by transforming the way organizations do business—moving relationships to a personalized, self-service model that enhances growth, reduces costs and improves productivity. Leading global companies use BroadVision to power their Enterprise Self-Service initiatives—using the Web and wireless devices to unify and extend an enterprise's applications, information and business processes to serve its employees, partners and customers in a personalized and collaborative way.

BROADVISION®

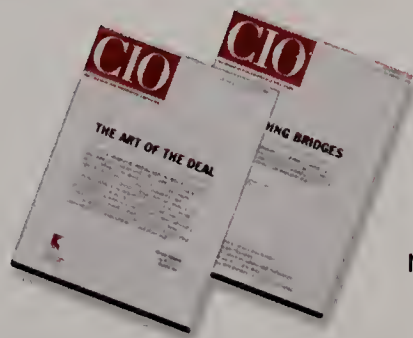
It's OK to show off to your friends that you were in CIO.



But it's even better to show your **customers.**

What better way to inform your key customers of your editorial coverage in CIO than through customized Editorial Reprints?

Leverage the positive impact of your editorial coverage by using reprints for direct mail campaigns, seminar promotions, employee communications, recruiting



and marketing programs. Let us enhance your reprints with your company's logo, address, and sales message. Reprints make great SALES tools for trade shows, mailings or media kits.

And while a framed copy of your article will look neat on your wall, it will look even better in the hands of your customers.



Reprint • Services

For more information on customized editorial reprints in volume quantities, contact Kelly Stickney 651-582-3834 or kastickney@reprintservices.com or visit our website at cio.com/marketing and click on reprints.

HEADQUARTERS
San Antonio, Texas

CORE BUSINESS
Telecommunications services

FINANCIALS
2000 revenues of \$53.3 billion

EMPLOYEES
216,000

URL
www.sbc.com

COMPANY PROFILE

SBC's ECOSystems is a suite of data analysis and visualization tools that helps the telecommunications company manage network capacity, improve customer service and forecast future demands. Since deploying the first ECOSystems tool in 1997, SBC estimates it has saved \$22.3 million in direct and indirect operating costs. When fully deployed, the system will create savings of up to \$10 million per year.

WHY THEY WON

Winner | SBC COMMUNICATIONS INC.

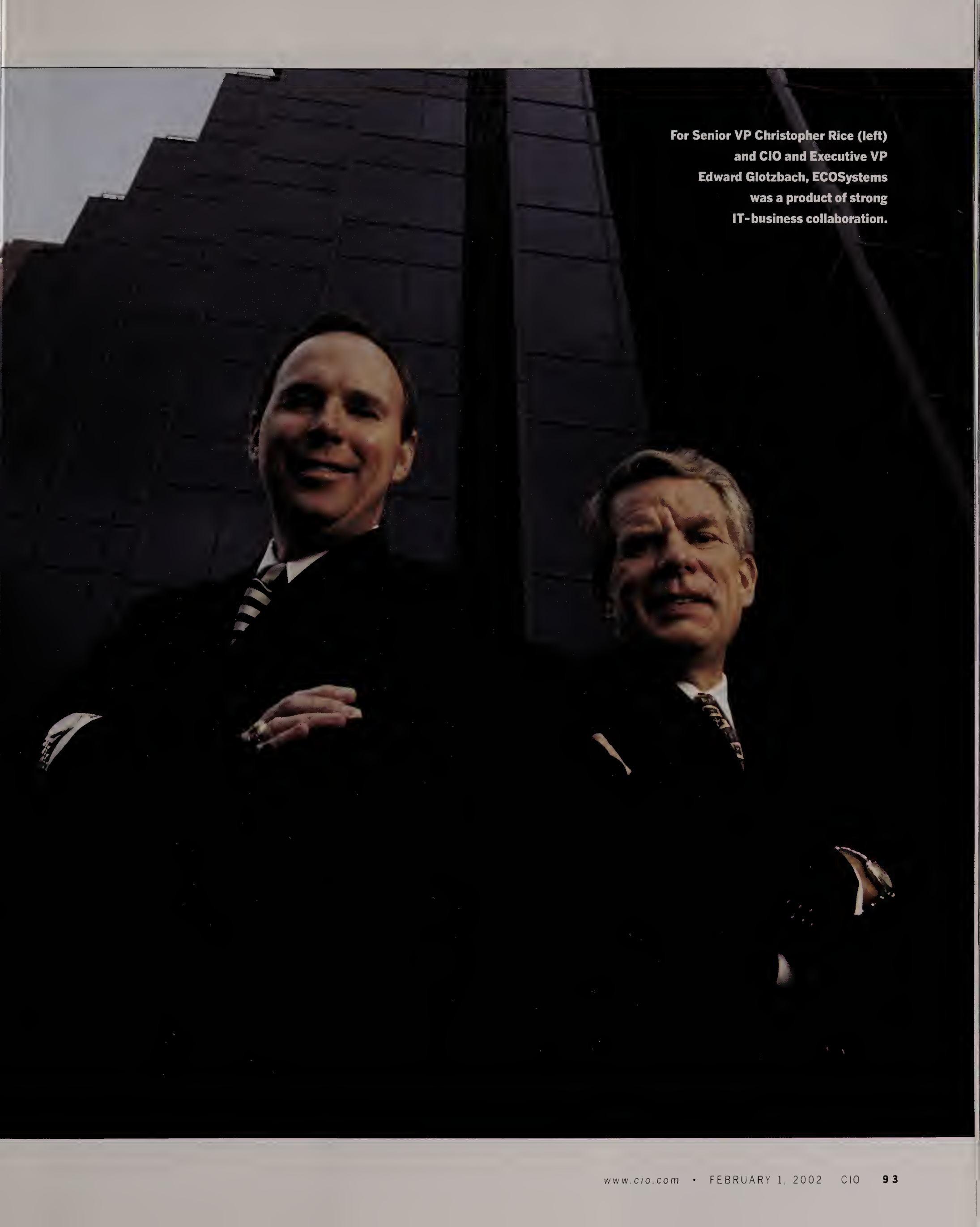
MORE LINES, LESS WAITING

SBC's network management tools do more than help the telecommunications company gauge capacity; they improve customer service and reduce costs as well

BY TOM FIELD

In the old days, when telecommunications companies held a monopoly on local and long-distance service, lost business wasn't a major concern. But when the competitive barriers came down in the late '90s, customer retention became a huge issue. That's when PacBell developed its Equipment Capacity Optimization Systems (ECOSystems), a homegrown suite of network capacity management tools first developed and deployed in 1997. ECOSystems allows engineers to automatically detect and respond to network capacity shortages with its data analysis and

Photo by
Steve Rawls



**For Senior VP Christopher Rice (left)
and CIO and Executive VP
Edward Glotzbach, ECOSystems
was a product of strong
IT-business collaboration.**

visualization functions. And with this fast, accurate data, SBC Communications—which acquired PacBell in 1998 and began rolling out ECOSystems throughout the parent company in 1999—now has faster network capacity management, improved customer service capability, and new metrics and business intelligence to measure network capacity and plan expansion.

For Noah Yates, the value of ECOSystems is more straightforward; as the 31-year veteran tells it, ECOSystems has given him his life back.

Before 1997, if Yates, a network engineer at SBC's PacBell subsidiary in San Diego, wanted to know when the telephone company's network capacity was near exhaustion, he had to do it manually. In technical terms, this meant pulling data from several different legacy systems and compiling it into demand versus capacity charts, which he would then pore over in an attempt to determine equipment utilization, network capacity and future demands. "It meant six and a half hours in the office on a Saturday, eating lunch at my desk, with no phone calls or interruptions," Yates says. And even then, because the information was anything but real-time, the data might be hopelessly outdated by the time Yates finished analyzing it. "We were exhausting [network] capacity without even knowing it," he says. Sometimes these shortages weren't discovered until Yates and his colleagues tried to fill customer orders for new lines or services. Then the engineers would have to place rush orders for new equipment installations, which cost the company 25 percent to 35 percent more in operating expenses than planned expansion, or customers would walk.

To SBC executives who have deployed ECOSystems throughout the company's four subsidiaries in 13 states, the project's biggest measurable success is that it's taken an all-day task for engineers and diminished it to under 10 minutes. "We have better, faster tools, which give us better predictability," says Andy Geisse, vice president of enterprise software solutions, the IT group at SBC's PacBell offices in San Ramon, Calif.

Christopher Rice, senior vice president of SBC's network planning and engineering group at SBC headquarters in San Antonio, Texas, notes the IT and business collaboration that resulted in ECOSystems. "I've never been more impressed by IT folks [collaborating] with engineers," Rice says.

Frankly, the capabilities provided by ECOSystems couldn't come at a better time. Like most telecom companies, SBC has hit tough times. Last October, the company delivered lower-than-projected third-quarter

results and announced it would eliminate several thousand jobs and cut capital spending by approximately 20 percent in 2002. In this cost-conscious environment, ECOSystems is credited with having saved SBC \$22.3 million in operating expenses since its initial deployment. By 2003, SBC expects, savings will reach \$10 million annually.

In awarding the company a 2002 Enterprise Value Award, judges were struck both by the capabilities and cost savings embodied in ECOSystems. "I'm impressed by [SBC] going right down to the core of what they do, and making it significantly better," says judge John Glaser, CIO and vice president of Partners HealthCare System in Boston.

Born of Necessity

The need for better network capacity management became glaring during the Internet boom of the late '90s. "Prior to the Internet, we were

**ECOSystems
has saved SBC
\$22 million; by 2003,
savings will reach
\$10 million annually.**



Faster tools mean better predictability, says Andy Geisse, VP of enterprise software solutions.

PHOTO BY TIMOTHY ARCHIBALD



What powers *your* success?



Gateway's championship nerve center provides the computing infrastructure for multiple venues before, during and after the Olympic Winter Games of 2002. The business takes place at 10 separate venues spanning 1,250 square miles over 17 days. As the Official Computer Hardware Supplier to the Salt Lake 2002

Games, Gateway has a full line of desktop, notebook and server solutions powered by Intel® processors to meet the rigorous demands of the Olympic Winter Games — and your business. Our unrivaled technology solutions, fiercely competitive values and dedicated team of business sales representatives can help meet your business goals as well. Let us champion your success. Call us today.

Gateway powers the Olympic Winter Games
with great people, great solutions and great value.

Gateway® PCs use genuine Windows® Operating Systems
<http://www.microsoft.com/piracy/howtotell>

Gateway® 930 Series

A new high-speed server for workgroups, E-Commerce and other applications. Excellent data storage capacity and advanced features to prevent downtime.

- Intel® Pentium® III Processor 1.0GHz with 256K L2 Cache
- Support for 1.13GHz and 1.26GHz with 512KB full-speed L2 Cache
- 256MB PC133 ECC SDRAM (expandable to 4GB)
- 18GB Ultra160 SCSI SCA (10,000RPM) Hard Drive
- Integrated 1GB Ethernet
- FCC Class A Emission Standard³

Starting at **\$1499¹**



Solo® 5350X Notebook

Power through projects with a notebook that rivals the performance of a desktop — yet offers mobility to go wherever the job takes you.

- 14.1" XGA TFT Active Matrix Display
- Mobile Intel Pentium III Processor-M 1.06GHz
- 256MB SDRAM
- 20GB Ultra ATA Hard Drive
- Modular 3.5" Diskette Drive
- Modular CD-RW Drive
- Integrated 10/100 Ethernet and Modem
- Microsoft® Windows® 98
- 3 Year Limited Warranty²

\$1599¹



888.203.4555

Come into your
local Gateway® store.

gateway.com



¹ Prices and configurations subject to change without notice or obligation. Prices exclude shipping and handling and taxes.

² Limited warranties and service agreements apply; visit gateway.com or call 1-800-846-2000 for a free copy.

³ FCC Class A products may not be sold for home use.

©2001 Gateway, Inc. All rights reserved. Gateway Terms & Conditions of Sale apply. Not responsible for typographical errors. Gateway.com and Gateway Country Stores, LLC are separate legal entities. Gateway, the Gateway Stylized Logo, Solo and the Black-and-White Spot Design are trademarks or registered trademarks of Gateway, Inc. in the U.S. and other countries. The Intel Inside Logo, Intel and Pentium are registered trademarks in the U.S. and other countries. Microsoft and Windows are registered trademarks of Microsoft Corporation in the U.S. and other countries. Ad Code: 007434

COST: \$2.1 million

HARDWARE: Databases are housed on Compaq Proliant application servers running under Microsoft Windows NT. The business layer resides on the application server, and the client application is installed on standard SBC desktops.

SOFTWARE: The business layer, which calculates network demand and capacity, consists of Microsoft Transaction Server 2.0 and customer server-side Component Object Model libraries developed with Microsoft Visual Basic 6.0. The client application for data presentation is a Microsoft Visual Basic 6.0 program that includes Distributed Component Object Model Libraries and ActiveX controls.

NETWORK: ECOSystems total network consists of 39 million access lines, 31,000 Sonet (fiber-optic) rings and 1,500 digital cross connect systems.

THE WINNING SYSTEM

SBC uses a variety of IT value assessment tools. To evaluate ongoing operations and performance, the company uses a Balanced Scorecard measuring IT value in four basic areas: cost, quality, delivery and personnel. A variation of the scorecard was used for the ECOSystems deployment. Some items tracked during each phase of the software development life cycle include financials, time lines, deliverables and milestones. When determining value, SBC executives try to ensure that overriding business concerns and long-term strategy are taken into consideration. For example, SBC's entry into long-distance telephone service will take years to show significant financial returns, but it is already viewed as a strategic necessity as part of the company's product portfolio.

VALUE STRATEGY

able to do capacity management on more of a planned basis—we knew the peak times were [on workdays and holidays],” says Ronald Ong, the technical director of IT and engineering systems who headed the ECOSystems development team. “With the Internet, conditions are not as predictable.” Suddenly, businesses required more lines, bigger bandwidth and more functionality, all on a 24/7 basis. Rather than risk exhausting capacity or losing customers to an increasing number of competitors, PacBell undertook the ECOSystems project.

To date, developers have rolled out four separate ECOSystems applications, two of which have been deployed long enough to meet the time requirements necessary for Enterprise Value Award consideration. These are:

■ **Rule-Based Capacity Management**

This first tool, deployed in June 1997, monitors the capacity, demand and maintenance records for roughly 30 different types of equipment (switches, relays and so on) throughout the network. Engineers use this tool to create graphical images that show them instantly whether their systems are at or near capacity.

■ **Sonet Analysis and Visualization**

Deployed in August 1998, this tool allows engineers to generate demand versus capacity

charts as a topography graph. These graphs use colors to show where systems are at or below capacity. At a glance, engineers can see which parts of the network need attention, reducing their analysis time from about six hours to eight seconds.

But more than just allowing engineers to monitor systems, those ECOSystems tools send out e-mail alerts whenever there is a network capacity issue that could result in disconnections or busy signals. Then engineers can view the problem, diagnose it and write a justification for the work as required by California's Public Utilities Commission before it becomes an expensive rush job.

Today, 700 engineers are using ECOSystems, and as a group they receive an average of 150 e-mail alerts daily, resulting in an average of 500 system reviews. The engineers are now nipping potential capacity situations before they occur, resulting in fewer rush jobs. These reduced operating expenses (engineers' time and rush jobs eliminated) account for the \$22 million SBC has saved so far since deploying ECOSystems.

cio.com

Read more on this topic in our **INFRASTRUCTURE RESEARCH CENTER** at www.cio.com/infrastructure.

IT as Hero

There have been small technical challenges in adapting ECOSystems to accommodate different terminologies at the various SBC subsidiaries. But there has been no significant user resistance, executives say. “It's been kind of a Nirvana system,” says Edward Glotzbach, SBC's CIO and executive vice president. “Not only was ECOSystems not that expensive to deploy, but it's also proven extremely useful, and everyone loves [IT] for it.” To Glotzbach, the field acceptance of ECOSystems gives IT a business-side credibility it can leverage in future projects. “When you can improve the quality of life of the employee serving the customer, that always makes IT a hero,” he says.

Next, developers want to incorporate artificial intelligence technologies to make ECOSystems respond not just to current network conditions but also to something that engineers can do today only through guesswork: Anticipate and plan for future demand capacities. “This system tells me where I'm at with today's network, but I want it to tell me what I can do in the future,” Yates says. “That won't be easy.” But it also can't be as hard as life before ECOSystems. **CIO**

Executive Editor Tom Field can be contacted at tfield@cio.com.



Eliminate PROJECT SELECTION Guesswork

Can you afford to guess which projects will provide the most value to your company?

Primavera TeamPlay® lets you confidently pick your clear project winners.

Wrap your arms around all of your projects using **Primavera TeamPlay** from **Primavera Systems** - the world's leading developer of project management software. Primavera TeamPlay provides the easiest way to track and prioritize all of your projects to improve execution and predictability. You'll be able to respond quickly to market changes and choose the projects that match best with your business goals.

Primavera TeamPlay has already helped thousands of project-driven companies in the financial services, banking, corporate IT and software development industries to select and execute the correct projects with confidence. Let Primavera TeamPlay make you a winner - by eliminating the guesswork.

Call 1.800.423.0245 or visit us at www.primavera.com/ci2.


PRIMAVERA
TeamPlay®

Visit us at www.primavera.com/events to learn about our free online seminars.

The Process

HOW WE PICKED THE WINNERS

Enterprise Value Awards judges and review board members overcame logistical challenges to assess the value of this year's winning systems

BY KATHERINE NOYES

Deciding the winners of the CIO Enterprise Value Awards gets tougher every year. If you think of the pool of applicants as a class of students, then this year's group was like an advanced placement course for overachievers. In such cases, it's much harder to pick out the cream of the crop.

The judging task was simpler 10 years ago, when CIO launched the awards program—the winners were much easier to discern,

Photography by
Furnald/Gray



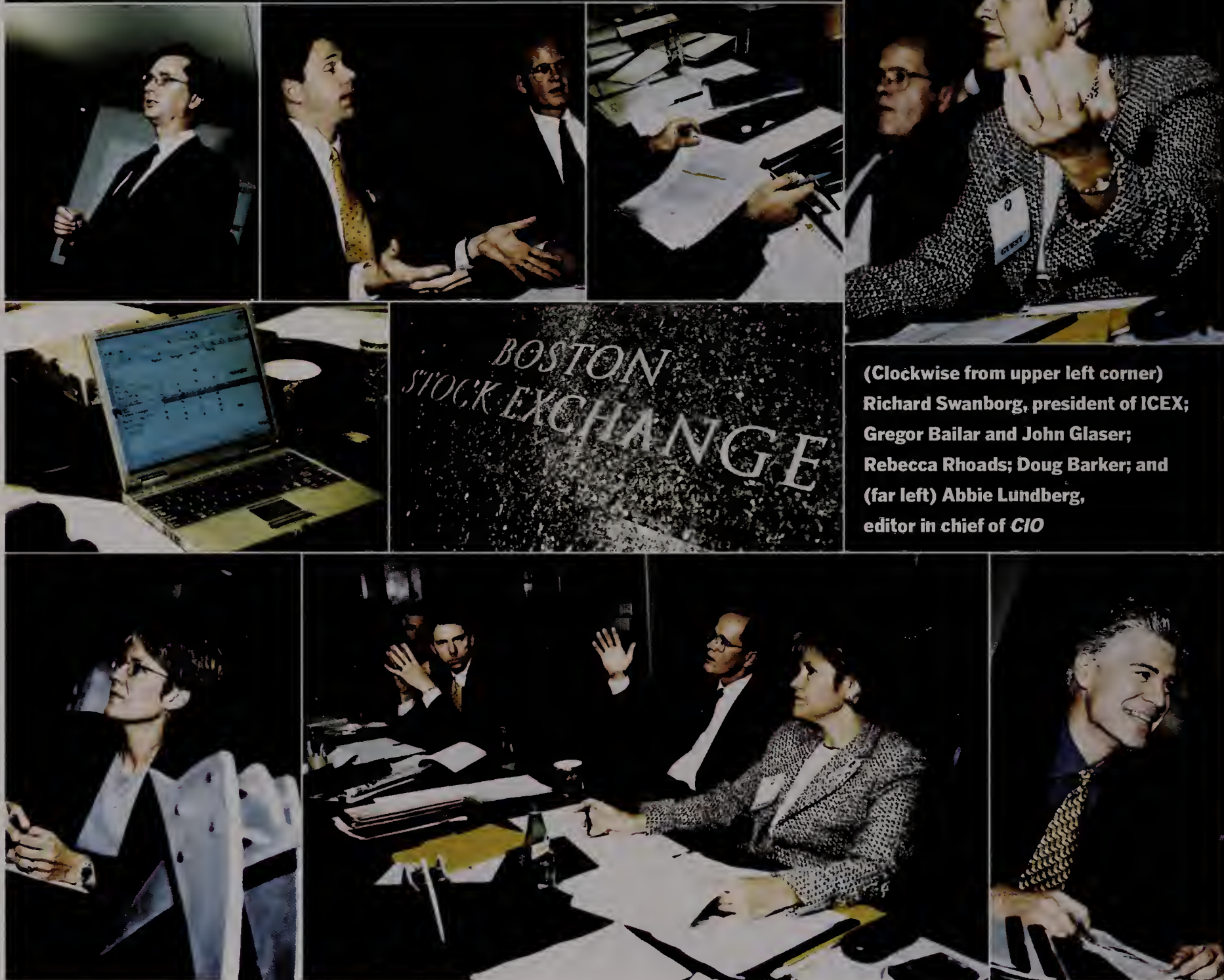


The Judges

(From left) John Glaser, VP and CIO, Partners HealthCare System; Doug Barker, VP and CIO, The Nature Conservancy; Rebecca Rhoads, VP and CIO, Raytheon; and Gregor Bailar, CIO, Capital One Financial

The Judging

Sept. 27, 2001 Boston Stock Exchange



(Clockwise from upper left corner)
Richard Swanborg, president of ICEX;
Gregor Bailar and John Glaser;
Rebecca Rhoads; Doug Barker; and
(far left) Abbie Lundberg,
editor in chief of CIO

thanks in part to the fact that the evidence of their success generally came in financial, easily quantifiable and comparable terms. This year's applicants, on the other hand, excelled in ways that were not only more strategic in nature but also harder to quantify and compare. Many even introduced social and ethical benefits into the equation. Which has greater value: a system that earns a company billions in new revenue or one that helps a government organization protect the environment? It's questions like that

"Value is much more multifaceted than we might have given it credit for several years ago."

—JOHN GLASER, VP AND CIO, PARTNERS HEALTHCARE SYSTEM

that made this year's judges' jobs so hard.

"Value is much more multifaceted than we might have given it credit for several years ago," says judge John Glaser, vice president and CIO of Partners HealthCare System in Boston. "What we find is that value has been extended, often on the part of nonprofit and government organizations, to social improvement, the improvement of the health and knowledge of the citizenry as a whole. We also find value related to the education of the workforce, to manag-



SIGNED.
SEALED.
DIGITALLY
DELIVERED.

When your business is online, sealed documents, signatures and handshakes
no longer work. Let RSA Security bring authenticity to your e-business.



The Most Trusted Name in e-Security®

www.rsasecurity.com

ing relationships in a broader sense with a set of key constituencies.”

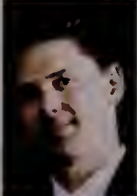
IT value takes so many forms today; trying to compare and rank them is a brutally tough task. But that’s just what we did, over a period of roughly four months. Beginning in June, *CIO* editors, along with a review board of seven IT practitioners and consultants, reviewed 42 entries from organizations in a wide range of industries. To make it to the next level, the applicants’ systems had to have been deployed for at least two years, and the applicants had to demonstrate the benefits of those systems for the entire enterprise. After several weeks, the team had narrowed the field to 10 finalists.

During the next few weeks, review board members conducted in-depth examinations of the finalists to better understand how they used the nominated systems. The review board grilled business users about the value the systems brought to their organizations and pressed executives to justify the results they claimed on their applications. Among the criteria considered were the systems’ strategic, customer, financial, operational and social impacts.

The examination process is always rigorous and demanding for all involved, but this year the tragedies of Sept. 11 intervened to make it even more difficult. In the weeks following that catastrophic day, appointments for interviews, meetings and site visits had to be rescheduled or sometimes canceled, and it was up to our review board members to get the information they needed however they could.

“It was very tough,” notes Richard W. Swanborg, president of Boston-based research group ICEx and Enterprise Value Awards cochair (with *CIO* Editor in Chief Abbie Lundberg). “The review board worked exceptionally well at dealing with these challenges, and the final outcome was a judging event that had as much integrity as in past years.”

Despite all the chaos, the final judging took place at the Vault Boardroom at the Boston Stock Exchange in late September,

THE JUDGES	
	Gregor Bailar CIO, Capital One Financial, Falls Church, Va.
	Doug Barker Vice President and CIO, The Nature Conservancy, Arlington, Va.
	John Glaser Vice President and CIO, Partners HealthCare System, Boston
	Rebecca Rhoads Vice President and CIO, Raytheon, Lexington, Mass.
THE REVIEW BOARD	
	Susan Cramm President, Valuedance, San Clemente, Calif.
	Jim McGee Clinical Professor of Technology and Electronic Commerce, Kellogg School of Management, Northwestern University, Evanston, Ill.
	Virginia Reck Vice President and Cofounder, Kendall Consulting Group, Sarasota, Fla.
	Mary Silva Doctor Principal Consultant, Omega Point Consulting, Winchester, Mass.
	Sheila J. Smith Managing Partner, Omega Point Consulting, Palm Beach Gardens, Fla.
	John Storck Professor, Boston University, Boston
	Richard W. Swanborg Cochair, Enterprise Value Awards; President, ICEx, Boston

as planned. At the daylong event, review board members gave detailed presentations about the finalists they had examined. Our four judges then debated the merits of these finalists, weighing and comparing their respective benefits and impact both within and outside the organization. In the end, they selected five winners of the 2002 Enterprise Value Awards.

“It was an incredible pool of very impressive applications, so it was really hard to choose,” says judge Doug Barker, vice president and CIO for The Nature Conservancy in Arlington, Va. “I think those that differentiated themselves as winners were those that were truly brilliant in some way. They

CIO.com

To read more about the **ENTERPRISE VALUE AWARDS**, see our Web awards page at www.cio.com/eva.

weren’t just taking technology and applying it to a business process in a straightforward way; they were fundamentally changing business propositions and adding tremendous value to the whole value proposition chain.”

CIO’s Enterprise Value Awards are among the most rigorous in the industry, and they are certainly unique for the way they recognize truly outstanding applications of information technology to create real business value. It’s a testament to the value of these winning systems as well as the dedication of our judging team that this year’s awards process was completed on schedule and in strict adherence with our traditional, unyielding standard of quality. We extend our deepest thanks to everyone involved. **CIO**

Application forms for the 2003 *CIO* Enterprise Value Awards will be in future issues of *CIO* and on our website at www.cio.com/eva. The deadline for entry is May 15. For more information, contact Special Projects Assistant Cristina Sousa at 508 935-4630 or csousa@cio.com.



The events of 2001 have proven that America's business and IT organizations are both adaptive and strong — *but where do we go from here?*

APRIL 14-16, 2002 ■ SHERATON BAL HARBOUR BEACH RESORT ■ BAL HARBOUR, FLORIDA



Strategies *for* the New Reality

Get powerful insights and actionable ideas from the people you trust the most: your CIO peers at leading companies, plus thought leaders on the economy, the law, technology and business.

Jonathan Zittrain, noted speaker and Executive Director of the Berkman Center for Internet & Society at the Harvard Law School, joins us as conference moderator.

We'll tackle:

■ **THE ECONOMY**

How long and rocky is the road ahead?

Robert Shiller, Economist and author of *Irrational Exuberance*

■ **IT AND BUSINESS STRATEGIES**

Re-align — on a continuous basis — as the world keeps changing. A panel of global CIOs, led by Richard W. Swanborg, *President and Founder, ICEX*

■ **LEADERSHIP AND COMMUNICATIONS**

Get the results you want — from senior management, peers, and employees. Dr. Rick Brinkman, author, *Dealing with People You Can't Stand...*

■ **IT BUDGETS** Learn the tools and techniques successful IT executives use to set, sell and manage budgets. A panel of CIOs, led by Martha Heller, *Director, CIO's Best Practice Exchange*

■ **LEGAL LIABILITY** Know where you and your company are vulnerable — and what you can do about it.
Bruce P. Keller, *Partner, Debevoise & Plimpton*

PLUS A special update on security, the latest CIO Tech Poll results on IT spending, emerging technologies, the CIO/CFO relationship, and the best networking opportunities around!



Strategies for the New Reality

APRIL 14-16, 2002 ■ SHERATON BAL HARBOUR BEACH RESORT ■ BAL HARBOUR, FLORIDA

Powerful insights. Actionable ideas. Great network

SUNDAY, APRIL 14

8:00 am – 1:30 pm

Golf Tournament

3:00 pm – 5:00 pm

Registration

6:00 pm – 8:00 pm

Welcome Reception

The perfect time to meet your peers, *CIO* editors, Corporate Hosts and special guests.

MONDAY, APRIL 15

7:30 am – 8:30 am

Breakfast & Registration

8:30 am – 8:45 am

Welcome & KnowPulseSM Poll

ABBIE LUNDBERG

Editor in Chief, *CIO* Magazine

8:45 am – 9:30 am

Opening Keynote: Is There Such a Thing as Too Much Security?

JONATHAN

ZITTRAIN,

Conference

Moderator

Executive Director,

The Berkman Center for Internet & Society, Harvard Law School

The push toward a more secure Internet has been revitalized by recent events. Just what forms will that security take? Implications reach far beyond combating viruses and denial of service attacks. Almost every way we use the Internet, especially for commerce, stands to evolve, as "security" and



"trust" become the touchstones of Internet development.

9:30 am – 10:15 am

CIO & CFO: Working Together for Better Results

NEIL HASTIE

CIO, TruServ

Corporation

The CIO and the CFO

are the two executives

whose domains stretch to every

corner of a company — as IT is

woven through every aspect of the

organization, and bottom-line concerns exert greater influence on all

initiatives. Regardless of where

they sit on the organization chart,

the two will always have a unique

relationship — one inevitably colored with tension. A CIO and CFO

look at the nature of the roles, and

discuss how to strike the right balance between an appropriate

amount of tension and respect —

and why doing so will produce better corporate results.



10:15 am – 11:00 am

Keeping Up with Emerging Technologies in Turbulent Times

CHARLES S.

BRENNER

Senior Vice President,

Fidelity Center for

Applied Technology

The hardest part of a CIO's job is

trying to keep up with emerging

technologies. In today's turbulent

economic times, companies also

need to decide whether or not to



invest in new technology development.

Fidelity Investments is one company that has continued to invest

heavily in innovation. The company

created FCAT, the Fidelity Center

for Applied Technology, which

investigates emerging technologies

and tests new products and software

that might someday become part

of Fidelity's services.

In his best-selling book, *Irrational*

Exuberance, Shiller documented

the combination of factors that

drove stock markets to dizzying

heights, and forecasted the dangers

associated with that phenomenon.

The dot.com bubble burst, the

economy quickly slowed—and the

events of September 11th continue

to take a heavy toll psychologically

and economically. Where do we

go from here?

2:00 pm – 2:45 pm

Business Briefings

2:45 pm – 3:30 pm

Business Briefings

3:45 pm – 4:45 pm

CIO Panel: Rethinking IT and Business Strategies

Moderator: RICHARD

W. SWANBORG, JR.

President and Founder,

ICEX

Panelists:

JOHN GLASER

Vice President

and CIO,

Partners HealthCare

System, Inc.

JOHN GLOTZBACH

Executive Vice

President and CIO,

SBC Communi-

cations Inc.

How do you keep your

IT strategy relevant and

visible while your business under-

goes significant change? How do you

improve the speed for setting an IT



To enroll or for more information, call 800 366-0246, fax the form to 508 879-7720, or visit our website at www.cio.com/conferences

"Sharing knowledge is critical to survival. *CIO Perspectives* gives us the opportunity to share with and learn from the best."
-WATSON WYATT WORLDWIDE

"Great opportunity to spark new ideas beneficial to our IT organization and business."
-A.O. SMITH CORPORATION

"In two days I learned of several useful innovations; we'll implement the first one tomorrow."
-AUTOBYTEL, INC.

ng. It all adds up to the best ROI for you.

strategy and getting buy-in from all your stakeholders? Is there a better way to fund and quickly deploy a new strategic initiative while minimizing the risk of failure? Top CIOs share their views and experiences.

4:45 pm -- 5:45 pm

Legal Liability: When You and Your Company Can Be Sued

BRUCE P. KELLER

Partner, Debevoise & Plimpton

To what extent are you and your company exposed based on how employees or third parties interact with your IT systems? Do you know what your systems are really hosting? A number of corporations recently discovered that their systems functioned as "super nodes" for the FastTrack file-swapping network. Keller examines how current concepts of organizational liability, privacy and intellectual property use in the marketplace affect corporations.



6:00 pm -- 7:00 pm

Reception

The best place to get connected, exchange more good ideas and get practical advice.

TUESDAY, APRIL 16

7:30 am -- 8:30 am

Breakfast & Informal Discussion Roundtables

Chat with *CIO* Magazine editors and your peers over coffee.

8:30 am -- 8:45 am

Corporate IT Spending Trends — Where Are They Headed?

GARY BEACH

Group Publisher, CXO Media Inc.

CIO Magazine, in partnership with Ed Yardeni, chief investment

strategist of Deutsche Banc Alex.Brown, surveys a panel of senior executives on current and future IT spending, as well as other issues. Beach presents an overview of the latest results and emerging trends from the *CIO Tech Poll*.



8:45 am -- 9:45 am

New Tools, New Approaches to E-Crime: A US Secret Service Briefing

BOB WEAVER

Assistant Special Agent in Charge, US Secret Service, NY Electronic Crimes Task Force

The Task Force's approach is unique in law enforcement because of its focus on prevention, education and partnership with private industry, as much as its responsibilities for investigation and support of prosecution. Weaver, and Peter Cavicchia — one of the members of his New York team who is specially trained by the USSS to handle electronic crimes — provide specific practices and techniques used by the NY Electronic Crimes Task Force to combat electronic crimes,



including forensics techniques, technology tools, and approaches the Task Force takes that are mutually productive for business as well as law enforcement.

This session is produced in cooperation with the National Critical Infrastructure Assurance Office (CIAO) in the US Department of Commerce.

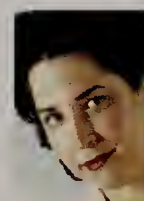
9:45 am -- 10:45 am

Best Practice Exchange: Setting, Selling and Managing the IT Budget

Moderator: MARTHA HELLER

Director, Best Practice Exchange, *CIO* Magazine

CIOs who want to see their projects completed and their staff intact understand the importance of smart budget practices. This panel of CIOs, drawn from the *CIO* Best Practice Exchange, a private online network of senior IT executives, discusses the tools and techniques each uses to set, sell, and manage their IT budgets.



10:45 am -- 11:15 am

Break

11:15 am -- 12:00 pm

Business Briefings

12:00 pm -- 12:45 pm

Business Briefings

1:00 pm -- 2:30 pm

Networking Lunch

2:45 pm -- 3:45 pm

Leadership and Communications

DR. RICK BRINKMAN

Author, *Dealing With People You Can't Stand...*

As CIOs gain more prominence within their organizations, they have more opportunities to interact with other senior executives, corporate officers and directors. Dr. Rick helps us understand the cause/effect of communications and get the results we want.



3:45 pm -- 4:45 pm

Closing Keynote

4:45 pm -- 5:15 pm

Summary/Conclusion

JONATHAN ZITTRAIN

6:00 pm -- 7:00 pm

Keynote Reception

7:00 pm -- 9:00 pm

CIO Dinner Party

Relax with friends old and new as *CIO* hosts a special dinner party overlooking the blue Atlantic.

Strategies for the New Reality



APRIL 14-16, 2002

SHERATON BAL HARBOUR BEACH RESORT

BAL HARBOUR, FLORIDA

- ☐ I won't be able to attend, but please keep me updated on future CIO events.

NAME

TITLE

COMPANY

ADDRESS

MAIL STOP

CITY, STATE, ZIP

PHONE

FAX

E-MAIL

COMPANY WEBSITE ADDRESS

NAME AS YOU WANT IT TO APPEAR ON YOUR BADGE

NAME OF MY COMPANION IF PARTICIPATING IN COMPANION PROGRAM

WHAT IS...

YOUR PRIMARY INDUSTRY?

YOUR ORGANIZATION'S ANNUAL REVENUES OR ASSETS?

YOUR ANNUAL IT BUDGET?

ENROLLMENT FEES

☐ IS Practitioner/Executive \$2,680

This fee applies if you are a CIO, IS executive or hold another executive position other than those listed below.

☐ Government/Military \$3,000

This fee includes your hotel for three nights. Do not make your hotel reservations, CIO will make them for you.

☐ Sales/Marketing/Consulting \$10,000

This fee applies if you hold a sales, marketing, business development or consulting position, including executive management of IT vendor and consulting companies. This enrollment fee is payable by company check only. CIO will make the final determination of this category.

☐ Companion Program \$375

Companions must be enrolled in this program to attend any conference-related functions. Includes all scheduled meals, receptions and entertainment, companion breakfast, and planned companion activities. Conference session attendance is not included.

If this is your first CIO event, your business card is required to process your registration.

4ROBF1

HOTEL ACCOMMODATIONS We urge you to make your reservations early by calling the hotel between 8am-5pm at 305 865-7511 and identifying yourself as part of the CIO conference to receive the conference rate. CIO will make hotel reservations for government/military participants only. Be sure to guarantee your room with a credit card, as all unreserved or unguaranteed rooms will be released on March 15, 2002. Hotel reservations, cancellations and charges are your responsibility. If a CIO conference Enrollment Form is not received within 48 hours of making your hotel reservation, your room will be released from the CIO room block.

ENROLLMENT FEES All enrollment fees must be paid in advance of the meeting. Fee includes conference sessions, business briefings, Corporate Host displays, conference materials and scheduled meals, receptions and entertainment. Transportation, hotel and recreation are your responsibility. Please note that submission of this enrollment form to CIO obligates the attendee/sender for the enrollment fee.

CANCELLATION All cancellations or substitutions must be made in writing. You may cancel your conference or companion enrollment up to March 15, 2002 without penalty. A \$350 administration fee will be imposed for cancellations between March 16-March 29, 2002. No refund or credit will be given for cancellations after March 29, 2002 or for no shows. You may send a substitute in your place. CIO reserves the right to decline enrollment to any registrant.

PAYMENT

- ☐ Check enclosed. Mail to: Executive Programs

CXO Media Inc., Box D3620

Boston, MA 02241-3620

- ☐ P.O. # _____ (A complete purchase order must be submitted within 10 business days.)

- ☐ MC ☐ Visa ☐ AmEx

ACCT. #

EXP.

SIGNATURE

- ☐ I am NOT staying at the Sheraton Bal Harbour Beach Resort.

NAME OF ALTERNATE HOTEL

To enroll or for more information, call 800 366-0246, fax back to 508 879-7720, or visit our Website at www.cio.com/conferences

Emerging technology

INNOVATION and PRODUCTS in the VANGUARD

Inside

Companies to Watch

Cs3 110

Under Development

Ultimate
encryption 112

Revisit

Parallel
computing 114

Predictions

Wireless
consumers 114



Special Delivery

As webpages get more complicated, content delivery networks aim to take a load off **BY SARAH D. SCALET**

Edited by Christopher Lindquist. Send your thoughts and ideas for future columns to clindquist@cio.com.

WHEN CUSTOMERS visit one of Terra Lycos's websites, they don't get every object on the pages straight from the online service company's global Web portal. Instead, a content delivery network (CDN) provider—Akamai Technologies—serves

up the images and streaming media from caches (or edge servers, as Akamai calls them) dispersed around the globe. Some localized news even arrives automatically based on which server is nearest to the customer. The result is a lighter

Reverse Firewall...Data security...Powerhouse computing...Mobile buying

load on Terra Lycos's servers and faster performance for users. But changes to how companies create their pages are forcing CDNs to reevaluate their services.

The original idea behind Akamai and other CDNs was pretty straightforward: Deploy large, often-requested files at the so-called edge of the Internet, where customers could retrieve them quickly. "Back in the days of the bubble, customer experience was the big priority," says Vince Russo, chief architect at Terra Lycos in Waltham, Mass. "But it also helps us reduce the load to our data centers and the number of servers needed." In fact, when Lycos started caching its images with Akamai about three years

ago, Russo cut his collection of image servers by more than half.

Studies by Giga Information Group have confirmed that CDNs can offer enterprises a significant return on invest-

years," says Joel Yaffe, a New York City-based analyst with Giga. "It's not just static content. Now more and more it's dynamic content, with Web servers asking for complicated information."

CDNs can offer enterprises a significant return on investment.

ment, and a reduction in infrastructure costs sounds pretty good during a recession. Unfortunately for CDNs—and their customers—filling repeat requests is getting trickier. "Websites have gotten so much more complicated over the last

Today, Web servers often build pages on the fly, using content tailored to a customer's location, type and other ever-changing criteria. It's a time-consuming process, and one that many companies would like to avoid.

"Companies consider repeat requests an annoying burden on the infrastructure," says Neal Goldman, an analyst with The Yankee Group in Boston. "If somebody keeps asking you the same question over and over again, someday you're going to post an FAQ and say, 'Go there, I wrote it down.' Then you'll have more resources available to handle non-standard requests. The question is, How much of that process can you cache?"

The Perfect Path

Internet route optimization as a speed solution

"THE INTERNET is broken. It works just because there's a lot of it, not because it's good," says Adam Joffe, director of technical operations at Sony Online Entertainment in San Diego. "The protocols that determine how packets get from place to place have nothing to do with performance or cost."

That's the problem Joffe is trying to work around as a beta user of new software from San Jose, Calif.-based startup NetVmg. Along with rivals Network Physics, Opnix, RouteScience and Sockeye Networks, NetVmg is developing path optimization products, which aim to wrestle control of the so-called middle mile—that troublesome space between the first mile where data travels through a network toward the Internet and the last mile before data arrives at the customer's computer.

Game players who download the action game *Tanarus* from Sony.com—then log on to compete over the Internet—may not realize it but Joffe is carefully monitoring where on the Internet his routers direct traffic. At any time, any one of Joffe's ISPs could suffer performance problems. If so, Joffe wants to temporarily avoid using that ISP; if not, he wants to use the cheapest option.

Joffe is mum on how much money the software has saved, but he says that a vast majority of players surveyed indicated that performance was better or the same as before the introduction of NetVmg. "Users won't necessarily see all of a sudden that their routes are faster, but over time [those connections] won't go bad," he says.

Each vendor has its own approach, of course. While NetVmg's is purely software, Sockeye provides a service that uses Akamai Technology's worldwide network of servers to find the best route. Opnix, on the other hand, uses a combination of equipment and software to do the job.

"You can't choose this hop, then this hop," says Greg Howard, principal analyst and founder at San Andreas, Calif.-based The HTRC Group, who's paying close attention to these new tools. "You can say, right now, this connection is better performing. There are always spikes in performance. If you can eliminate them or dramatically reduce them, then you can dramatically increase the performance of the website." —S.S.

The World of CDNs

Both ISPs and companies serving up websites have long used caching to speed up content delivery. Usually, popular content such as homepages and "heavy" files such as graphics and streaming media are placed in a cache for quick access closer to the customer. And customers find the services valuable: The three largest cache providers—Cacheflow, Inktomi and Network Appliance—have combined revenues of approximately \$350 million.

What CDNs do is create a distributed set of those caches, with a routing layer that determines which cache is closest to any given website visitor. Some telecommunications companies, including AT&T and Qwest, quietly offer CDN services, but most of the attention goes to the pure plays that are aggressively marketing the CDN model. The largest

Integrate

facilitate

incorporate

accelerate

motivate

liberate

Finally, a single integration solution to a complex problem.

Only **STERLING Integrator** can manage your complete business processes with a single, unified platform.



The problem is how to integrate: how to aggregate data, accelerate its movement, automate processes, and communicate information to facilitate solid business decisions. The problem is how to support B2B and EAI interactions without cobbling together disparate technologies that were never intended to mesh.

The problem has finally been solved with **STERLING Integrator**. The result is a more streamlined integration solution that:

- ▶ provides real-time visibility
- ▶ requires fewer IT resources
- ▶ promotes re-use of integration scenarios
- ▶ allows for rapid deployment
- ▶ enables total recovery of data

Educate yourself. Formulate a better strategy. Alleviate the complexities and inefficiencies. For a copy of our **STERLING Integrator Technical Overview**, call 800-299-4031, select option 2, ask for program 7143. Or visit, www.sterlingcommerce.com/go/integrate/now.

of them, Akamai, has more than 13,000 servers around the world. The second largest, Digital Island—which purchased rival Sandpiper Networks, and then was purchased by Cable & Wireless—has 2,700 servers. Speedera and Mirror Image are two smaller competitors that remain in the consolidating marketplace.

A new kind of rival is on the way, though. Two different plans in the works would allow companies to link their own CDNs together. One of them is an Inktomi-led initiative called Content Bridge, which would band together smaller CDNs—ideally, ones that used Inktomi boxes—that had fewer nodes than Akamai. The initiative has yet to get off the ground, mainly because many of the CDNs involved went bust along with the Internet bubble. Analysts are more optimistic about the Content Alliance, a self-governing, standards-based group initiated by Cisco Systems.

“What Akamai gives the enterprise is ubiquitous closeness to the consumer,” Goldman says. “If you’re a hosting company, you have your own network, and you look at Akamai and say, ‘I can do that, all I need is caching. Why give Akamai any

as AOL Time Warner, AT&T, IBM, Qwest, RealNetworks and Sun Microsystems are among the dozens who have signed on—it is still a ways from fruition (too far off to worry about, say some analysts).

Getting Dynamic

In the meantime, existing CDNs see their growth potential in serving up increasingly dynamic content—not just graphics, but information that changes regularly, such as news items.

If Russo has his way, by the time you read this, Terra Lycos will have a whole new model for serving pages. Take, for instance, the news page at *news.lycos.com*. Different parts of the page have different life spans. The navigation bar rarely changes. But the editor’s picks change every day, and breaking news changes every few minutes. “Each of those regions of the page has a different lifetime,” Russo says. “The fact that part of the page has to be updated every few minutes means that the rest of the page can’t be cached.”

By rewriting the page to a new scripting language called Edge Side Includes (ESI), Russo hopes to change that. ESI

The Content Alliance is working on an open standard that will allow competing companies to agree to send traffic across each other’s networks, a process called content peering.

margin?’ But you don’t have the same thing because your network doesn’t reach everywhere in the world.” In response, the Content Alliance is working on an open standard that will allow competing companies to agree to send traffic across each other’s networks, a process called content peering. But creating an open standard is a slow process. Although Content Alliance has an impressive roster—companies such

is a nonproprietary language developed jointly by Akamai and Oracle. It integrates the applications server with the Akamai network, allowing static webpages to be broken up into different pieces with different lifetimes. The CDN can build the page, pulling information from the originating servers only when necessary. How successful ESI is will depend, ultimately, on how many ven-

Companies to Watch

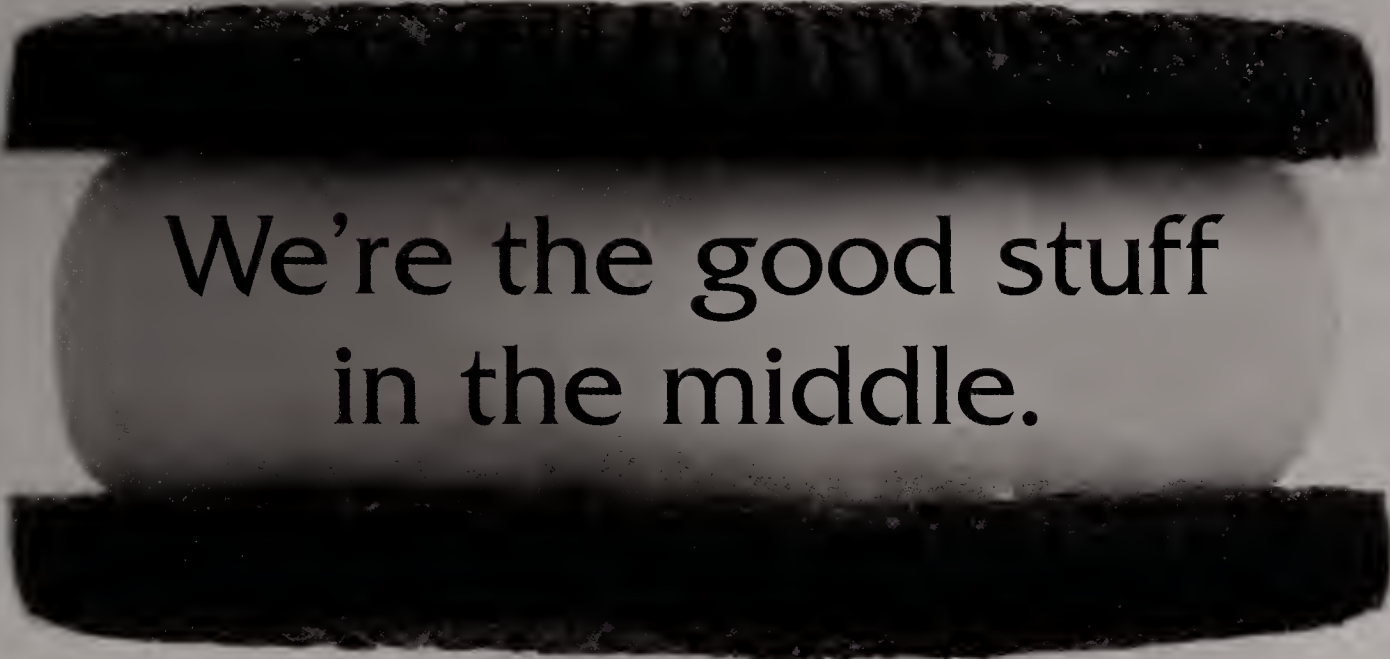
Cs3

LOS ANGELES software maker Cs3 likes to look at problems from a different direction.

The company, which has done R&D for the National Science Foundation and the Department of Defense, recently released the MANAnet Reverse Firewall. The device does only a single job, but it’s an important one: It prevents distributed denial-of-service (DDOS) attacks from leaving a network once they enter, helping to stop such assaults from propagating across the Internet.

To thwart the attacks, the Reverse Firewall first limits bandwidth to requestors, preventing a DDOS attack from swamping a connection. It also queues up unexpected packets. DDOS packets generally don’t expect a reply from the servers they invade. In response, the Reverse Firewall serves two-way traffic at a much higher priority than one-way traffic. If it sees 30,000 requests to scan for ports at one time, it will make those requests wait in line while two-way traffic goes through. Meanwhile, it will report the fact that there are 30,000 barbarians at the gate to the network administrator.

Cs3 sells the Reverse Firewall for \$4,000, though it is looking to license the technology to router and network security vendors for inclusion in their own products. For more information, visit www.cs3-inc.com. —Scott Berinato



We're the good stuff
in the middle.

Need great mid-market CRM software?
Oncontact is a slam dunk.

If you're searching for a mid-market customer relationship management solution, boy do we have a sweet package for you: Oncontact. Our software goes with the mid-market like cookies go with milk. Want features? We double stuff a ton of functionality into our software (other companies make you pay extra for "add on" modules that you need).



And here's an added twist: our software is not only extremely easy to use, it's completely customizable, affordable and it supports most major relational databases. To get a taste of the best CRM software for the mid-market, call for more information or schedule a demo today. Call 800-886-0866, or visit www.oncontact.com.



Mid-market CRM made easy

dors sign on and the ease with which companies can recode their HTML.

Akamai predicts that by using ESI, Russo will be able to turn off 40 percent to 60 percent of his Web servers. "I'm a little dubious of that number," he says. "Maybe we'll only have to serve 6 percent of the content on a page view. But

Existing CDNs see their growth potential in serving up increasingly dynamic content.

that 6 percent takes a lot of extra power to serve because it's the most complex part of the page." Instead, he's hoping to reduce the number of Web servers by 20 percent or 30 percent, with a smaller reduction in the amount of bandwidth and number of application servers needed.

That may sound good, but CDNs must improve further before they're dynamic enough for everyone. Kim Ross, CIO of New York City-based Nielsen Media Research, says his company, which crunches data about television audiences, produces data so complex that he hasn't even Web-enabled it yet—to say nothing of trying to use a CDN to deliver it.

Nielsen's data changes every day, and few customers want to pull the same information. "Just about every query a customer does is unique to that company—their show against other shows, time period, demographics," he says. "[Vendors] haven't made their way to highly dynamic, highly unique, and that's where the business is." ■

Senior Writer Sarah D. Scalet can be reached at sscalet@cio.com.



UNDER DEVELOPMENT

Encryption

Unbreakable?

AS MYSTICS search for the lost island of Atlantis and UFO buffs seek out alien spacecraft, cryptologists are continuing their own quest to create an unbreakable code.

Michael Rabin, a Harvard University computer science professor, believes he has moved cryptology a step closer to its Holy Grail by developing a code that's undecipherable, even by those who have access to both the cypher text and unlimited computing power.

Rabin's Hyper-Encryption technology, which uses a device that quickly generates a deluge of random bits, relies on both time and money to thwart even the most dedicated code breaker. A coded message would be hidden within the bits "like raisins in a pudding," quips Rabin. While anyone can read the random bits, the transmission rate is so high that storing all of the stream for analysis would be either technically unfeasible or cost prohibitive.

Hyper-Encryption has sparked the interest of several U.S. government agencies, says Rabin. He also claims to have received inquiries from some wealthy investors and at least one major venture capital fund. But Rabin states he's not currently interested in the technology's commercial potential. "Right now, commerce comes second to science," he says.

Hyper-Encryption, however, is not entirely trouble free. The chief concern is cost, since the technology requires users to send continuous, intense streams of high-speed data across already bandwidth-starved networks. Rabin's solution is to create a dedicated global satellite system. "The cost could be shared by its users," he says. In any case, Hyper-Encryption is designed to safeguard highest-level government secrets, not routine commercial and personal transmissions. "It's most appropriate for protecting national interests and large sums of money," says Rabin.

Although Hyper-Encryption exists only on the blackboard, Rabin maintains that the technology is ready for use. "There's mathematical proof the Hyper-Encryption provides everlasting security, so there's nothing left to do but implement it," he says.

—John Edwards



Desperately trying to squeeze more data into your database? Store Smarter.™

active
archive

Introducing Active Archive Solutions:™ The intelligent way to optimize database performance.

Over the next decade, mission-critical databases are expected to grow by more than 40% every year. How will you keep applications running at peak performance without endless hardware upgrades? Active Archive Solutions dramatically reduce the size of your database by setting aside infrequently used data. However, the data is always kept "active" for easy access. You improve performance and availability without having to squeeze your database or your budget. Learn more. Call 800.457.7060 or visit www.storesmarter.com.

© 2001 Princeton Softech Inc. All rights reserved.

princeton
softech

REVISIT

Parallel computing

Many Working Together

Massively parallel processing is still looking for the mainstream

BY FRED HAPGOOD

PRODUCT NAMES are not always obvious—think of the anxiety drug Alprazolam, for instance—but sometimes marketers get to go home early. One such moment passed in the early '90s when a computation technology called massively parallel processing (MPP) launched its bid for CIO mind-space. The name came ready-made from the scientific and technical domain, where it referred to the practice of throwing very large numbers of processors at resource-hungry problems such as fluid dynamics, seismic processing, molecular modeling and astrophysical simulations.

The term resonated with a developing issue in enterprise computing: By the early '90s CIOs were well aware that resource demands were going to grow forever—or at least until well past retirement. That prospect underlined the need

for an IT architecture that could expand smoothly, simply and indefinitely by merely plugging in identical computing units one after another. Conventional, sequential computers did not fit the picture because there were limitations inherent in depending on a single processor. Even if a system contained several chips, one would always need to act as a manager for all the subprocessors. Inevitably this top processor and its memory buffers would become overwhelmed. When that happened the IT department would need to rethink the whole system and rewrite lots of software. MPP, on the other hand, seemed to promise plug-and-play scalability over the long term.

We liked the logic, and in a July 1993 article called "Divide and Conquer," we argued that MPP looked like a viable possibility for companies facing exceptional

Wireless

PREDICTIONS

Buying on Air

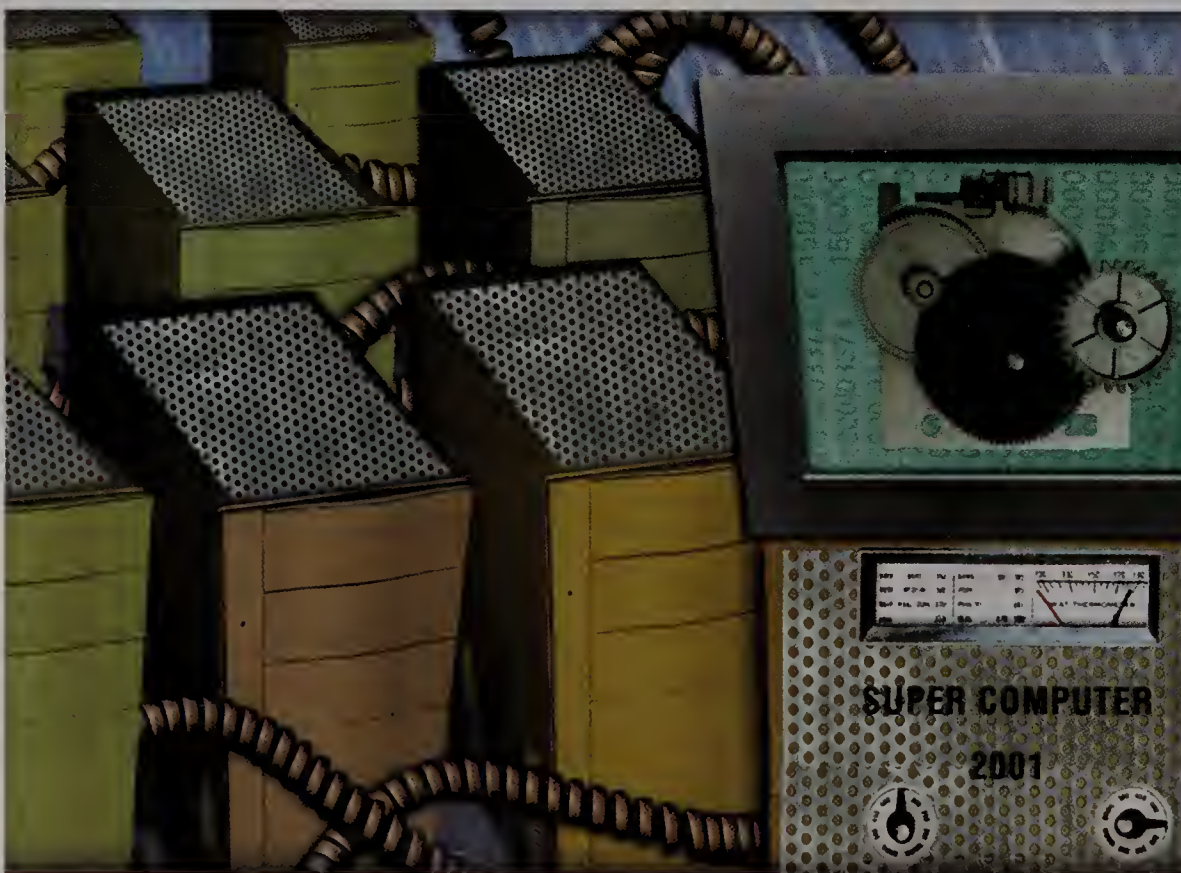
IT WON'T happen overnight, but people will ultimately accept the idea of buying goods and services via their mobile devices such as cell phones, according to a recent report by Boston-based Yankee Group.

The report, "Mobile Payments: What Are They Worth?" projects that by 2006, some 50 million wireless phone users will use their phones to purchase premium content and physical goods. The 50 million figure will be approximately 26 percent of all wireless users.

Those kinds of user numbers—even if they pay only a few cents for each transaction—could add up to some significant revenue. The Yankee Group predicts that these users will spend in the neighborhood of \$15 billion that year alone.

The report also includes information on the types of transactions most likely to occur as well as the kinds of businesses best positioned to benefit from the situation. For more information, visit www.yankeegroup.com.

—Christopher Lindquist





eHealth Suite™
2400+ admirers.
Be one.

And now...the world's
first truly integrated
fault and performance
management software

Start here:



Automating Technology Management™

800-851-8725 concord.com

...Atlanta...Boston...Chicago...Dallas...Hong Kong...London...Munich...Paris...São Paulo...San Francisco...Singapore...Sydney...Tokyo...

scalability problems. Admittedly, we noted, there were reprogramming, support, training and maintenance issues that needed to be thrashed out, but as more companies ran into the limits of conventional architectures, the market for solutions to these problems could only grow. "The cycle has begun," we said.

There may have been some sense that this was true. Still, had we known that a couple of years later most of the product lines (and some of the companies) mentioned in the article could be dead, our tone would have been cooler. The pro-

—the processing cost of the transaction.

One of the early fantasies of MPP was that it would save money by using lots of off-the-shelf chips instead of a few specialized mainframe processors. However, given the performance hit imposed by the stamp, or "communications tax," MPP vendors were in no position to accept a speed reduction by using low-performance chips. That meant they had to rewrite their software whenever a new chip came out. "We had to reprogram and reprogram and reprogram," remembers Adam Kolawa. "I remember a sequential programmer

communications tax is relatively lower and the constraints on programming somewhat relaxed. (Josh Coates, founder, CTO and acting CEO of Scale Eight, points out, however, that managing a single disk image spanning many hundreds of terabytes raises issues almost as demanding, such as making sure that all the writes that follow from a single data entry get made at the same time.)

In the mid-1990s, database vendors such as IBM and Oracle began to introduce relational databases that ran on a small number of processors, such as four or eight. While not massively parallel in the original sense—those systems had contemplated thousands of processors, and sometimes tens of thousands—these "modestly parallel" systems presented many of the same development issues, but in a smaller and more manageable form. Hardware companies began selling systems optimized for these applications. As the software and hardware grew together, more companies began finding ways to implement parallel processing of commercial data.

Step by step, this evolution is gradually hauling the IT world into more "moderately parallelized" environments. Four- and eight-processor boards are near commodities, allowing vendors to slap together fairly large machines for low prices. Torrent and Ab Initio have managed to encode the intelligence needed to write programs for dozens of processors into graphical tools, radically lowering the level of expertise needed to create multiprocessing applications. Rod Walker, president and COO of Knightsbridge Solutions, a Chicago-based systems integration company, says Knightsbridge finds itself using the Ab Initio software in more than half its implementations. "We have seen data processing times increase by 10 times, 20 times and sometimes 30 times," he notes. Given numbers like those, perhaps this time the cycle really has begun. **CIO**

One of the early fantasies of MPP was that it would save money by using lots of off-the-shelf chips instead of a few specialized mainframe processors.

gramming issue turned out to be particularly lethal. For example, one processor requires about a hundred instructions to send a message to a second processor. There is no logic in stepping through a hundred instructions just to send one; the sending processor could save 99 cycles by simply executing that one instruction locally. As a result, messages sent between MPP processors need to carry at least a hundred instructions just to break even. Therefore, MPP programmers had to think about more than just the immediate function. Their programs had to accumulate packages of instructions for each of the processors—it's like FedEx freight planes flying between two cities. If the packages were too large, some processors would be left waiting; too small, and they would fail to pay for the "stamp"

shaking his head and saying, 'Adam, you're wasting your life.'" (Eventually Kolawa agreed. He is now chairman and CEO of Parasoft, a software testing company in Monrovia, Calif.)

Still, the vision of MPP's smooth scalability was too attractive to give up completely, and during the next several years paths began to appear through the programming jungle. One was to move the MPP concept to a new application, from computation to storage. The steadily declining cost of storage has meant that companies now routinely work with databases measured in terabytes. Many are anticipating petabyte-level stores. Given current technology, it is difficult for a system based on sequential processing to keep track of more than a hundred terabytes (for the same reason: The processor gets saturated).

In theory, parallelized storage, as offered by companies such as San Francisco-based Scale Eight, can manage an infinite number of bytes. Further, since writing a single disk takes a thousand times longer than executing an instruction, the com-

CIO.com

Read Chris Lindquist's **TECH TACT: NEW TOOLS FOR NEW JOBS**, every Monday at www.cio.com.

Fred Hapgood is a freelance writer based in Boston. He can be reached at hapgood@pobox.com.

2002 Georgia CIO of the Year Awards™

Great CIOs
don't receive

the RECOGNITION
they
deserve.

Until NOW.

The Georgia CIO of the Year Awards™ are presented to Georgia-based chief information officers who have shown excellence in managing their enterprise-wide information systems. Visit www.georgiacioawards.com to submit your online application and for more details. And get the recognition you deserve.

Brought to you by:



darwin



www.georgiacioawards.com



The Magazine for Information Executives

CIO SALES OFFICES

President & CEO Joseph L. Levy • 508 935-4601

Publisher Gary J. Beach • 508 935-4202

Executive VP Sales/Custom Publishing
Ellen Romanow • 508 935-4796

Sales Operations Associate Kim Harris

East Coast

Senior VP Sales/East
Michael J. Masters • 973 244-4024

Senior Regional Mgrs./Advertising Sales
Eileen P. Lobaugh • 973 244-4040
Kathy Powers • 973 244-4041

Regional Sales Manager
Ellie Schwab • 973 244-4042

Account Executives
Joan Bonadeo • 973 244-4043
Sharon Kurcin • 973 244-4032
Gale Tedeschi • 973 244-4031

Office Mgr. Marlene Levis • 973 244-4033

Sales Asst. Lin Viggiano • 973 244-4035

Administrative Assistant
Sharon Harrison • 973 244-4037

New England

Senior Regional Manager/Advertising Sales
Len Ganz • 508 935-4039

Senior Advertising Sales Associate
Dawn Cora • 508 935-4092, Fax 508 879-6063

Advertising Sales Associate
Nancy Vescere • 508 988-7547

Mid-Atlantic

Senior Regional Manager/Advertising Sales
Louise Cupelli • 215 627-8114

Advertising Sales Associate
Maureen Welsh • 215 627-8114

South Central

Regional Director/Advertising Sales
Robert E. Sawdon • 512 306-9801, Fax 512 306-9805

Account Executive
Kevin T. Rutan • 512 306-9801, Fax 512 306-9805

Advertising Sales Associate
Brenda Garza • 512 306-9801, Fax 512 306-9805

North Central

Senior Regional Manager/Advertising Sales
Keith H. Kenner • 847 441-5005, Fax 847 441-5150

Account Executive
Beth Carlson • 847 441-3140

Sales Associate
Sarah Kaspar • 847 441-5005

West Coast

VP Sales/West Cheri McKeithan • 415 975-2685

Senior Regional Manager/Advertising Sales
James Barrett • 415 975-2680

Regional Manager/Advertising Sales
Ai Collins • 415 975-2686

District Manager
Kristin Nystrom • 415 975-2687

Account Executive
Sarajane Robinson-Retondo • 415 975-2693

Office Manager/Sales Associate
Brett McWilliams • 415 975-2670

Senior Advertising Sales Associate
Derek Jung • 415 975-2683

Advertising Sales Associates

Chris DaRosa • 415 975-2688
Anna Limon • 415 975-2694

Southern California

Regional Sales Manager Chris Hempel •
949 475-5579, Fax 949 475-5583

Account Executive Chris Bramel • 949 475-5579,
Fax 949 475-5583

Sales Associate Isaac Ugay • 949 475-5579,
Fax 949 475-5583

NEW BUSINESS DEVELOPMENT

VP, Business Development & Strategic Alliances
Cheryl M. Hardy • 202 625-8342

Coordinator, Business Development
Kelly Gabe • 202 625-8343

LIST SERVICES

List Services Director
Kathryn A.W. Marston • 508 935-4072

List Services Account Executive
Stephanie Roy • 508 935-4151

List Services Coordinator

Kim Cormican • 508 935-4152

List Services Billing Assistant
Rebecca Monto • 508 935-7835

ONLINE SERVICES

VP/Online Sales Lisa Brown • 508 935-4470

Online Sales Mgr. Michael McPhee • 508 935-4611

Online Account Exec. James Buckley • 508 988-6823

CUSTOM PUBLISHING

Group Director Michael Siggins

Director Mary Gregory

Project Managers Lisa Chaffin (Senior), Sally Ellison

Graphic Designer Chris Brown

REPRINT SERVICES

651 582-3834, E-mail kastickney@reprintservices.com

For further sales information, visit
www.cio.com/marketing/salesoffices.html.

CIO is published in the United States as well as in:

Australia, CIO Australia
P.O. Box 295, St. Leonards, NSW 2065, Australia
61-2-9439-5133; www.idg.com.au

Canada, CIO Canada (monthly)
CIO Enterprise Canada (biweekly)
Laurentian Technomedia Inc., 55 Town Centre Ct.
Suite 302, Scarborough, M1P 4X4, Ontario, Canada
416-290-0240; www.lti.on.ca/cio

China, CEO & CIO China
China Computerworld Publishing
Building 3, 4th Floor
16 Cuiweizhongli, Wanshou Rd.
Beijing 10036, China
8610-6825-9416; www.ceocio.com.cn

India, CIO India
Technology Media Group Pvt. Ltd.
3540 HAL 2nd Stage
Indiranagar, Bangalore, India 560 038
91-80-521-0309/12

Japan, CIO Japan
3-4-5 Hongo Bunkyo-ku
Tokyo 113-0033 Japan
03-5800-2931; www.idg.co.jp

Korea, CIO Korea
39, Dangsang-Dong 1-Ga, Youngdeungpo-Gu
Seoul 150-041 Korea
82-2-632-7561; www.cio.seoul.kr

New Zealand, CIO New Zealand
P.O. Box 6813, Wellesley St.
Auckland 1036 New Zealand
64-9-377-9902; www.idg.co.nz

Singapore, CIO ACEN/Hong-Kong
IDG Communications (s) Pte Ltd.
80 Marine Parade Road, #17-01A Parkway Parade
Singapore 449269
65-345-8383; www.idg.com.sg

IDG is the world's leading technology media, research and event company. Founded in 1964, IDG had 2000 revenues of \$3.1 billion and has more than 12,000 employees worldwide. IDG offers the widest range of media options that reach more than 100 million technology buyers in 85 countries representing 95 percent of worldwide IT spending. IDG's diverse product and services portfolio spans six key areas, including print publishing, online publishing, events and conferences, market research, education and training and global marketing services. More than 100 million people read one or more of IDG's 300 magazines and newspapers in 85 countries each month. IDG's five global publication product lines—*Computerworld/InfoWorld*, *CIO*, *Macworld*, *Network World* and *PC World*—account for more than 175 of these titles, delivering a consistent audience of buyers throughout the world. IDG's online network includes 300 websites in 70 countries, reaching more technology buyers with the broadest network of technology content online. Supported by more than 2,000 journalists, IDG's websites provide focused, useful content that meets the needs of distinct communities around the world. IDG's online network is also supported by the world's only 24-hour global technology news organization, the IDG News Service, reporting the latest technology news and analysis in multiple languages around the world. International Data Corp. (IDC) is the world's leading provider of IT data, analysis and consulting. With research centers in 43 countries and more than 575 research analysts worldwide, IDC is uniquely positioned to provide a global perspective on the IT market. IDG is the leading producer of more than 168 globally branded conferences and events in 35 countries. Industry-leading international event series include LinuxWorld Conference & Expo, Macworld Conference & Expo, and ComNet. IDG Global Solutions helps the industry's leading IT companies build international brand recognition by developing globally integrated marketing programs via IDG's print, online and event products. IDG's diverse portfolio of global partnership services includes customized research and publishing, targeted conferences and seminars, and direct response tools. For more information, visit www.idg.com.



CIO.COM

CIO Resources
Current Issue
Previous Issues
Free Newsletters
Subscriber Services
Executive Programs
Search

RESEARCH CENTERS

ASP
CIO Executive
CRM
Cyber Behavior
Data Warehouse
E-Business
ERP
Future CIO
Globalization
Gov't & IT Policy
Infrastructure
Intranet/ Extranet
IS Staffing
IT Professional
Knowledge Mgmt
Leadership & Mgmt
Outsourcing
Security & Privacy
Supply Chain Mgmt
Wireless Comm.
Web Professional

OPINION/ANALYSIS

Analyst Corner
Ask the Expert
CIO Radio
Discussion Forums
Metrics
Quick Poll
Reading Room
Sound Off

CAREER

CIO Wanted
Events Calendar
Movers & Shakers
Web Jobs

CXO SERVICES

Advertising Info
Editorial Calendar
Editorial Staff
List Services
Press Info
Reprints
Sales
B2B NETWORK
WHITE PAPERS
Site Map
Feedback to CIO
CXO.com

What's Your Problem?

CIO.com's experts are online to tell IT like it is

Ask the Career Counselor

Korn/Ferry International's Mark Polansky offers advice on managing your career.
www.cio.com/counselor

Ask the Expert

Industry leaders answer your questions on technology and business issues.
www.cio.com/CIO/expert

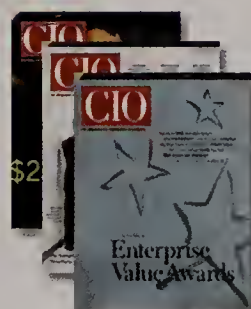
Ask the Author

The authors of best selling business books respond to your questions.
www.cio.com/books



CURRENT ISSUE

Each issue of CIO is online, along with additional research resources.



PREVIOUS ISSUES

Our archive is a goldmine! Every article from CIO magazine dating back to 1994 is at your fingertips.

— DAILY @ CIO.com —

Monday

Tech Tact: What's coming in technology, and what it's good for.

Tuesday

Quick Poll Report: Hundreds of CIOs can't be wrong. Or could they?

Wednesday

Metrics: Industry numbers that count, from the country's top analysts.

Thursday

Sound Off: Read the column. Join the debate.

Friday

The 35-cent Consultant: An advice column about everything from ethics to extranets.

— ALWAYS @ CIO.com —

CIO.com Research Centers

22 intelligence portals that keep you up-to-date with articles, case studies, white papers, metrics and more about technologies and strategies such as ASPs, ERP, and Wireless Communications.
www.cio.com/forums

Analyst Corner

Informed opinions on major technologies and trends from global translation to next-generation wireless. From Current Analysis, Giga Information Group, Hurwitz Group, IDC and Robert Frances Group.
www.cio.com/analyst

CIO Wanted

Senior level IT Career Opportunities.
jobs.cio.com

C I O S E R V I C E S

[Awards Programs](#)
[B2B Network](#)
[Custom Publishing](#)

[Custom Research](#)
[Executive Programs](#)
[Partnership Programs](#)

[Press Info](#)
[Marketing Resources](#)
[Reprints](#)

Feedback to CIO.com

Questions, suggestions or ideas please contact Andrew Burrell, *audience development manager*, at aburrell@cxo.com.

Index of Companies and Advertisers

Page numbers refer to the first page of the article(s) in which the company is mentioned. This index is provided as a service to readers. The publisher does not assume any liability for errors or omissions.

Company Index

Aberdeen Group Inc.	56
Akamai Technologies Inc.	107
Albertson's Inc.	24
BEA Systems Inc.	72
BlueMarble Telecom LLC	24
Bowne & Co.	24
BulkRegister	24
Cable & Wireless	107
Cacheflow Inc.	107
Capital One Financial Corp.	24, 48, 98
Challenger, Gray & Christmas	24
Cs3 Inc.	107
Digital Island Inc.	107
Dow Chemical Co., The	48, 56
Enterprise Rent-A-Car	48, 72
Fishbeck, Thompson, Carr & Huber Inc.	82
Gartner Research	24
General Motors Acceptance Corp.	72
Giga Information Group	107
GTE Corp.	24
HTRC Group LLC, The	107
Hyatt Corp.	48
IBM Corp.	72
ICEX	98
Inktomi Corp.	107
Invitrogen Inc.	24
Joseph E. Seagram & Sons	24
Kendall Consulting Group	98
Knightsbridge Solutions LLC	107
Mediabistro.com Inc.	24
Metropolitan Life Insurance Co.	72
Mirror Image Internet Inc.	107
Nasdaq Stock Market Inc., The	48
NetVmg Inc.	107
Network Appliance Inc.	107
Network Physics	107
Neutron Media LLC	24
New York Mail and Transportation Co.	24
Nielsen Media Research Inc.	107
Omega Point Consulting LLC	98
Opnix Inc.	107
Oracle Corp.	107
Parasoft Corp.	107
Partners HealthCare System Inc.	48, 56, 92, 98
Perrier Group of America Inc.	48
Raytheon Co.	48, 98
RouteScience	107
Safeway Inc.	24

Sandpiper Networks Inc.	107
SBC Communications Inc.	48, 92
Scale Eight Inc.	107
Sockeye Networks	107
Sony Online Entertainment	107
Speedera Networks Inc.	107
Sun Microsystems Inc.	72
Terra Lycos	107
Trust Co. of America	24
Valuedance	98
Vanguard Group Inc., The	46
Vanion Inc.	24
Verizon Communications Inc.	24
Western Digital Corp.	24
Yankee Group, The	107

Advertiser Index

American Power Conversion	51
Avaya	41
Cognos	25
Computer Associates Intl. Inc.	5, 55
Concord Communications	115
Crystal Decisions	59, 61
CXO Media Inc.	35, 71, 79, 91, 103, 119
Datalink	C3
DLTape Technology	45
Fujitsu	C2
Gateway Inc.	95
Georgia CIO of the Year	117
Harris STAT	53
Hewlett-Packard	22
IBM Corp.	38
IDC	121
Infonet Services Corp.	37
Kingston Technology	C4
Kronos Inc.	85
Maxtor	47
Mercury Interactive	29
Michigan Economic Development Corp.	43
Microsoft Corp.	2, 18
MicroStrategy	17
NEC/Mitsubishi	10
NTT Communications	13
Oncontact Software	111
Oracle	9
Parametric Technologies Corp.	31
Primavera Systems Inc.	97
Princeton Softech	113
Red Hat/Compaq	81
RSA Security Inc.	101
Siebel Systems	15
Sony Corp.	65
Sterling Commerce	109
Sun Microsystems Inc.	7
salesforce.com	27
Toshiba America Inc.	21

Editorial, Advertising and Business Offices:

492 Old Connecticut Path, P.O. Box 9208,
Framingham, Massachusetts 01701-9208,
508 872-0080.

CIO (ISSN 0894-9301) is published
semimonthly and as a combined issue
December 15/January 1 by CXO Media Inc.,
492 Old Connecticut Path, P.O. Box 9208,
Framingham, MA 01701-9208. Periodicals
postage paid at Framingham, MA, and at
additional mailing offices. Canada
Publications Mail Agreement Number
1902075. CANADIAN POSTMASTER:
Please return undeliverable copy to P.O.
Box 1632, Windsor, ON N9A 7C9.

Permissions: Copyright 2001 by CXO Media
Inc. All rights reserved. Reproduction of
material appearing in *CIO* is forbidden
without written permission. Send all
requests to Permissions Department, *CIO*,
492 Old Connecticut Path, P.O. Box 9208,
Framingham, Massachusetts 01701-9208.

Photocopy Rights: Permission to photocopy
for internal or personal use or the internal
or personal use of specific clients is granted
by *CIO* for users through the Copyright
Clearance Center, provided that the base fee
of \$3 per copy of the article, plus \$.50 per
page is paid directly to Copyright Clearance
Center, 27 Congress Street, Salem,
Massachusetts 01970. Please specify: ISSN
0894-9301. Permission to photocopy does
not extend to contributed articles followed
by this symbol: ‡.

Subscriptions: Address inquiries to *CIO*,
492 Old Connecticut Path, P.O. Box 9208,
Framingham, Massachusetts 01701-9208;
800 788-4605. *CIO* is free to qualified infor-
mation executives. To all others the one-year
basic rate is \$94 for the United States and
Canada, \$175 to foreign countries (payable
in U.S. funds only). The single copy price
is \$9. Please allow four to six weeks for new
subscriptions to begin.

Change of Address: Please fax a copy of
current subscription label along with new
address to 508 879-7899. Allow four to six
weeks for change to take effect.

Postmaster: Send change of address to *CIO*,
P.O. Box 489, Northbrook, Illinois 60065-
9816. Printed in the U.S.A.

EXTREME RESEARCH



The business landscape can be treacherous. Are you getting the right advice to anticipate future trends and develop your strategy? You will with IDC, a market intelligence partner that's on the inside track. We take research to the next level, providing unbiased analysis, accurate predictions and results-oriented direction. We also offer unsurpassed global reach and presence. Count on us to give you the direction you need. You could go places others may not have considered.

 **IDC**
Analyze the Future

FOR MORE INFORMATION ON IDC, VISIT US AT WWW.IDC.COM/EXTREME or call 508.872.8200

EXECUTIVE

Summaries

February 1, 2002

ENTERPRISE VALUE AWARDS

The New Notion of Value

By Katherine Noyes | 48

I.T. value used to be measured in dollars saved—whether by cutting costs, reducing head count or improving efficiency. But IT value has changed. Today, IT is often a catalyst that triggers massive, beneficial transformations in organizations. The notion of value has also extended beyond the company walls to business partners, to industry and to society as a whole. This new value proposition is reflected in the winners of this year's CIO Enterprise Value Awards.

ENTERPRISE VALUE AWARD WINNER

Dow Chemical

By Stephanie Overby | 56

AS DOW CHEMICAL executives restructured their company around business processes rather than locale, Dow developed an intranet-based HR system to serve the needs of its globally scattered employees. Within this intranet it launched Learn@dow.now, a \$1.3 million e-learning system that delivers standardized online training around the world. In its first full year of operation, the site delivered an estimated total cost benefit of \$30 million, including savings on training delivery costs, class materials and salaries (Web-based training requires 40 percent to 60 percent less of an employee's time than its classroom equivalent). The company helped ensure a successful launch by holding traditional classroom training on how to use the online system and requiring all employees to sign up for its first courses.

ENTERPRISE VALUE AWARD WINNER

Pennsylvania Department of Environmental Protection By Sarah D. Scalet | 62

AS PART OF A CHANGE IN MIND-SET from merely conducting inspections and levying fines to monitoring and caring for the environment, the Pennsylvania Department of Environmental Protection developed a \$20 million system to track and monitor companies and governmental agencies' compliance.

Known as eFACTS (Environment, Facility, Application, Compliance Tracking System), the database is used by department employees to manage workflow, generate complex reports and view information spatially. Much of that information is put online so that citizens can easily learn about pollution in their neighborhoods. Using top 10 lists of violations derived from eFACTS, department employees can target their time and budget to deal with the biggest infractions and head off environmental disasters. More than a dozen states have contacted the department expressing interest in the software.

ENTERPRISE VALUE AWARD WINNER

Enterprise Rent-A-Car

By Eric Berkman | 72

WITH ITS AUTOMATED RENTAL MANAGEMENT SYSTEM (ARMS), Enterprise has streamlined operations for car insurers that pay for rentals to replace owners' vehicles damaged in collisions. Because using ARMS makes it easier to do business with Enterprise, the company's volume of business with major insurance companies that use the system has grown twice as fast as its overall business with insurers. Enterprise has calculated that 6.8 phone calls are cut from each rental transaction, saving the insurance industry between \$36 million and \$107 million annually.

ENTERPRISE VALUE AWARD WINNER

Michigan Department of Transportation

By Stephanie Overby | 82

FIELDMANAGER, a road construction management software suite developed and co-owned by the Michigan Department of Transportation (MDOT) and Info Tech, a Gainesville, Fla., software company, eliminates a time-consuming and error-prone paper process for managing road construction projects. The improvement has helped MDOT triple its budget for construction projects while cutting its staff from 5,000 to 3,000 since FieldManager was launched in May 1999.

An unusual financial partnership agreement gives Info Tech the right to sell the software but stipulates that licensing fees paid by other states are used to further develop FieldManager. The deal also grants Michigan's state and local transportation entities a perpetual license, mandates that MDOT approve any future software changes and pays MDOT royalties from sales to private users.

ENTERPRISE VALUE AWARD WINNER

SBC Communications

By Tom Field | 92

LIKE MOST TELECOM COMPANIES, SBC has hit tough times. In October 2001, SBC announced it would eliminate several thousand jobs and cut capital spending by approximately 20 percent in 2002. With that sort of financial pressure, the company is glad its acquisition, PacBell, had the foresight in 1997 to develop ECOSystems. The suite of data analysis and visualization tools helps SBC manage network capacity, improve customer service and forecast future demand. Replacing inefficient manual methods, ECOSystems turned an all-day task for engineers into a 10-minute exercise, saving \$22.3 million in operating expenses since its initial deployment. By 2003, SBC expects savings to reach \$10 million annually. But more than just allowing engineers to monitor systems, these tools improve customer service by sending e-mail alerts whenever there is a network capacity issue that could result in a disconnection or busy signal.



Amazing how one call
from Datalink could
set so much in motion.

Your shrewd decision to integrate
Hitachi Freedom Storage™
to optimize your IT strategy.



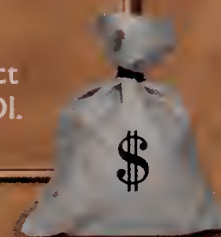
HITACHI
DATA SYSTEMS

So every department could access
your data warehouse 24 x 7.



Which meant they
could spot and react
to trends well before
the competition.

Resulting in a dramatic impact
on the company's ROI.



And an even bigger one on your R&R.
Three cheers for the cosmic circle.

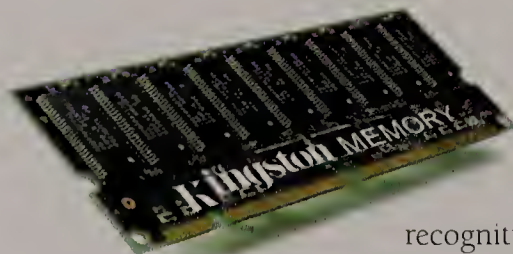


Information Means The World.



INVESTING IN YOUR FUTURE

KINGSTON
MEMORY



KINGSTON® HAS INVESTED OVER \$120M IN MANUFACTURING AND TESTING EQUIPMENT. Our in-house engineers have even designed patented testers (pictured above) that increase testing efficiency beyond industry standard procedures. It is this extra effort that has earned Kingston recognition by *IndustryWeek* as one of five outstanding manufacturing companies worldwide, along with such powerhouses as Toyota Motor Corp, Merck & Co. and Nestlé SA. Additionally, CRN's 2001 Ultimate PC Awards recognized Kingston as an outstanding technology vendor. For top of the line memory from an award winning company visit www.kingston.com.

 **Kingston**
TECHNOLOGY



*As appeared in the August 13, 2001 issue of *IndustryWeek* Copyright 2001 by Penton Media, Inc.
17600 Newhope Street, Fountain Valley, CA 92708 USA (714) 435-2600 Fax (714) 435-2699.

© 2002 Kingston Technology Company, Inc. All rights reserved. All trademarks and registered trademarks are the property of their respective owners.